

LE7  
Oscar & Maria Teresa af Strom  
[afstrom@yahoo.com](mailto:afstrom@yahoo.com)

107839-71  
7/12/04

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Ref: PTO40702

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Houston TX 77 205

July 2, 2004

Commissioner for Patents  
Office of Discipline and Enrollment  
P.O. Box 1450  
Alexandria, VA 22313-1450  
USA

Dear Sir or Madam:

Re: Request for Investigation and Advice.

On June 3, 2004, Attorney Rick Martin, Registration No. 32,267 & Docket No. RM666, forwarded to me a Declaration and Power of Attorney form to sign, as well as a copy of the Notice to file the Missing Parts. On June 10, i.e. only a week later, Mr. Martin forwarded to the Commissioner for Patents a Request for Withdrawal as Attorney or Agent. No information or warning that this action might be taken was ever forwarded. I received a copy by Federal Express on June 11, 2004.

In a nutshell, this is the story: In response to a request by me, Mr. Martin made an offer to draft 20 claims and file a patent application on 20 February, at the latest, provided he received a \$ 2000 retainer and the files on February 10, which he did. He spent the period February 10 to February 19 on nonessential matters, without preparing a draft for me to check. In the evening of February 19, he forwarded by fax the draft application, for me to proof read and approve. At that late stage, there was really nothing more to do than to attend to typographical errors and send the corrections back in order to make a February 20 filing possible. The application was filed on February 20, as scheduled.

As the 64 pages looked impressive and I was believing that Mr. Martin was as excellent an Attorney as his advertisement in Inventor's Digest seemed to indicate, I made the mistake of telling Mr. Martin that I thought that he had done an excellent work. However, after having studied the Patent Application Mr. Martin had prepared, I found that instead of the 20 claims offered, there were only 9, out of which Claims 1 - 6 had no relation, whatever, to my invention, and Claims 7 - 9 were word by word Claims 1 - 3 of the draft application I had supplied. Furthermore, most of the 64 pages text was word by word copied from the text I had forwarded, though allocated under different headlines. As can be seen from Attachment 5, very little of the text was drafted by Mr. Martin. Yet, Mr. Martin charged an additional amount of \$ 1,800 for the filing, which he requested a few days before the deadline, thereby leaving me no alternative but to accept or to file late..

In response to my findings, I prepared a letter in which I demonstrated with samples that the major claim, Claim 1, did not have any relation to my invention and that the steps described were not possible to carry out. I forwarded this as a registered letter, on May 10, 2004, asking for Mr. Martin's comments. As I did not receive any reply, I repeated the text of my letter in an e-mail. Shortly thereafter, I received by Federal Express a copy of Mr. Martin's Request for Withdrawal.

In order not to make this letter too long, I have provided all pertinent information in the nine attachments listed below. I would be most obliged if you would examine this case and advise me of action to be taken. In my opinion, I have been treated in a non-acceptable manner, and would like to get my money back, possibly with some compensation. As I have previously received 6 US Patents, I presume that you have me on record.

**BEST AVAILABLE COPY**

Sincerely

  
Oscar af Strom

- Attachment 1 Background Information – 2 Pages
- Attachment 2 Relations and Communications - 5 Pages
- Attachment 3 - Copy of Draft Patent Application, Covering Letter & Patentability Search Report and Opinion - 26 Pages
- Attachment 4 Copy of Patent Application & Covering Letter - 68 Pages
- Attachment 5 A Comparison Between the Filed Patent Application, Prepared by Mr. Martin, and the Draft Application, Prepared by the Inventor - 5 Pages
- Attachment 6 Copy of Letter to Mr. Martin Regarding Claims 1 – 6 of the Patent Application – 8 Pages
- Attachment 7 Copy of Letter of June 3 under cover of which the Declaration of Power of Attorney and Notice to File Missing Parts was forwarded – 1 Page
- Attachment 8 - Copy of transmittal Letter and Forms re REQUEST FOR WITHDRAWAL AS ATTORNEY OR AGENT, duly completed and signed by Mr. Martin - 6 Pages
- Attachment 9 - Copies of Invoices, Received From Patent Law Offices of Rick Martin PC Together with Copies of Payments Made by the BillPay Service of United Nations Federal Credit Union During the Period February – June, 2004 - 10 Pages

**Attachment 1**

**Background Information**

2 Pages

## Attachment 1

### Background Information

I have been engaged in development of products the greater part of my life and have received several patents in various fields. My major interest has been image transfer in which field I have received 4 US patents. I am one of the pioneers of image transfer sheets. In 1963, I filed the application for an invention in this field which was approved in 1968 as US Patent No.3,344,012 INTERMEDIATE CARRIER FOR TRANSFER OF PRINTED PICTURES, I am also one of the pioneers in the use of transfer adhesives for image transfer. For this, I also forwarded an application in 1963, which resulted in US Patent No.3,607,525, allowed in 1971. In the US application re the Intermediate Carrier, I had included a silicone release system that had not been in the original application, which had been filed in Sweden in 1962. This release system remained in the application until its approval for patent, but was then eliminated by my US attorney when the application was to be published in 1968. He had been so directed by my Swedish Attorney. The reason given was that silicone release had not been included in the original application based on which priority had been requested. This cost me dearly in 1976, when Fasson refused to continue production of the Lift-a-Picture transfer sheets, due to the fact that one of their customers had received a patent on transfer sheets with such a release system.

In 1997 I came across a rubber based hot melt contact adhesive. I immediately understood its usefulness for image transfer, as the adhesive would migrate through printing ink and copy toner layers, when heated, provided it was included in a composite sheet together with a plastic sheet. This eliminates the need for a separate adhesive to make a decal stick, or for a second plastic sheet to fuse the same to the substrate... However, it was not easy to produce a composite sheet with this adhesive included, and it has taken me 5 years to develop one that can be used by consumers without risk for failure during any of the steps of a transfer.

I have developed the manufacturing in a small shop I have rented, assisted by a Mexican technician, who has signed a non-disclosure agreement. Furthermore, I have kept the developments protected by successive PPAs. The last PPA was filed in February, 2003, by my good friend and Patent Attorney, the late John D. Upham, Esq. I had prepared the text for a full PA, including claims, which were approved by Mr. Upham. Unfortunately, I have misplaced the copy and receipt from the PTO, which Mr. Upham forwarded to me in February or March, 2003.. I Attach a copy of a fax that I forwarded on 9 February, 2003, and I know that I forwarded the rest of the PPA on February 12, 2003, as stated in the fax that I would do.. I have a vague memory of a PPA filing date of February 20, 2003, but I have misplaced the file and have not been able to find it.

It was my intention to file the non-provisional application early in December, last year. However, my plans had to be changed. In November, during my wife's annual examination, a small breast tumor was detected. For this reason, I had to dedicate myself to my wife's health, and was not able to make the filing until in late February, 2004. To add to my difficulties, Mr. Upham passed away. For this reason, I had to select another patent attorney, and I selected one from an ad in Inventors' Digest.

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Ref: John D. Upham 30208

**Oscar & Maria Teresa af Ström**

"Oscar af Strom" <afstrom@yahoo.com>

**US Address**

Apt 325  
P.O. Box 60326  
Houston, TX 77205

9 February, 2003

John D. Upham, Esq.  
Fax 212-532-1334

Dear John:

Please find attached the draft of the Patent Application, completed until the Examples, of which I have completed the first one. I will work on the drawings tomorrow, and complete the Examples and the Abstract.

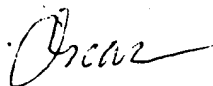
Having read several patent specification lately I note that almost all of them have a text that makes simple descriptions difficult to understand, I think by intention. I am afraid that my draft text is written in simple language in the way I have been used to express myself as a training expert, in order that my students may understand.

As to the production, we have now learned how to do it without wrinkles. We spoiled some good film on the corona treatment, which was not good at all. The film adhered better to the paper, but it destroyed the principle of using a one-side-coated paper of the Oscar II patent.. This principle works so well that we are using it for the composite sheets, as you will see from the attached pages.

I hope to be able to forward the rest of the application on Wednesday, and await your comments and suggestions for changes.

Best regards

Sincerely



**Attachment 2**

**Relations and Communications**

5 Pages

## Attachment 2

### Relations and Communications

During the first week of February, 2004, I contacted the Patent Law Offices of Rick Martin, asking whether they would be willing and able to file a patent application on my behalf prior to February 20, 2004. Mr. Martin accepted and forwarded the below e-mail

**Rick Martin** <[rmartin@patentcolorado.com](mailto:rmartin@patentcolorado.com)> wrote:

Hello:

I can meet your February 20, 2004 deadline with our five patent attorney staff. Minimum fee to draft 20 claims and file is \$2000. Specification changes are extra. I require \$2000 retainer and files by FED EX no later than February 10 to take project.

Regards,

Rick Martin

I accepted his offer and forwarded a draft patent application, including claims, with DHL on the 9<sup>th</sup> of February. The package was received the following day by Mr. Martin. The draft Patent Application and the covering letter and Search Report are attached as **Attachment 3**

Mr. Martin confirmed the receipt and requested me to provide the serial number of the PPA, not being satisfied with a copy of the letter dated .9 February, 2003,, (included in Attachment 1 – Background Information). In view of the fact that Mr. Upham had passed away that recently, I did not want to disturb Mrs Upham about a copy. Nevertheless, during a telephone conversation about this matter, Mr. Martin, who had been given her telephone number, got her on the line, asking her to search for the file, though obviously without result. I did also tell Mr. Martin that I had worked with the file with the copy of that PPA as late as in November last year, preparing for the non-provisional application, but that this file had since been misplaced

After having delayed the filing of the Patent Application in search of the PPA registration number, Mr. Martin turned to another delaying subject, the chemical composition of the Fasson S-246 adhesive. In a telephone conversation he told me that it was a requirement of the PTO to provide the formulas for all patents related to chemical applications. During the discussion, Mr. Martin disclosed that he had neither heard of transfer adhesive, nor of Fasson. He then asked me to obtain the chemical composition from Fasson. Otherwise, he would be forced to request his Ph. D. associate in California to make an analysis at a cost of \$ 250/ hour. I think he even had this person connected to our telephone conversation. I replied that I would forward the S-246 adhesive data sheet. Accordingly, I forwarded by fax the S-246 data sheet, ( which Mr. Martin included in the Patent Application), as well as the below information/instructions. In addition, I forwarded a package by mail with a sheet of the S-246 transfer adhesive, samples of how transfer adhesive is being used, as well as samples of transfers.. I

Rick Martin  
Fax 303 578 9953

Please find attached the S-246 adhesive Product Data sheet that I obtained in 1997 and one that I obtained a few months ago from Avery Dennison de Mexico S.A. de C.V. Avery Dennison have a web page .

I looked through the claims of some similar patents, and in none of these I could find the ingredients of the adhesive. For instance US Patent 4,685,984 gives details of the release chemicals but not on the adhesive. As to the transfer adhesive, any of the courier companies have it.

You may like to take a look at these patents, all of which utilize adhesive but none of which specify any details. These include my transfer patents:

3,344,012; 3,607,525; 3,985,602; 4,440,590; 465,984; 5,032,449 & 5,098,772

If you think that you cannot get a patent without specifying the ingredients of the S-246 adhesive, would you do me the favor of cashing my check, forwarding the application in my name using the address of the letterhead, together with the filing fee, and send me a check of the remainder, after having deducted your fee. This will give me the right to print Patent Pending on the transfer sheets, and give me an advantage in the market, stopping immediate copying. When I get the first letter from the PTO, I will send it to you for your evaluation, and if you don't think you can take it. I will keep the production method secret.

Regards

  
Oscar af Strom

Following receipt of that fax, Mr. Martin called me by telephone and told me that he would accept. However, he would have to provide new and different claims, as those I had drafted would make it necessary to pay a filing fee of \$ 4,000. I had hard to believe this, because I had never previously had to pay for the application based on the number or kind of claims contained. This matter, in my experience, would not come up until the application had been filed and examined. However, Mr. Martin was insistent, and for this reason I agreed to his offer to rewrite the claims so as not having to pay more than the standard filing fee. I did so reluctantly, because Mr. Martin did also inform me that in view of the length of the specifications I had provided, he would have to charge another \$ 1,800. Mr. Martin ought to have provided this information earlier, giving me a chance to respond and select the withdrawal alternative I had presented in my fax. Now, I was forced to accept in order to keep within the February 20 time limit.

As the draft patent application had been received by Mr. Martin on February 10, to be filed in its final form on or before February 20, there had been ample time to discuss via fax, telephone or e-mail any matters in doubt. However, absolutely nothing was discussed or asked about the invention proper during this 9 days period. All oral and written communication was related to the registration number of the PPA and the chemical composition of the S-246 adhesive. I had come to understand that Mr. Martin modus operandi was to scare his clients into accepting what he stated was the PTO regulations and rules. Most of these, like the requirement for the chemical formulas of products available in the market, I had never heard of, even though I have received 6 US patents. I felt that time was being wasted on non essential matters and I had given up hope that the patent application would be filed in time. As no sales had been made and nothing published about the invention, the filing date of February 20 was really not that important. However, I was expecting to receive a fax or an e-mail from Mr. Martin, presenting the proposed amendments to my draft specifications and claims, inviting my comments, before the filing of the application, giving me a couple of days to study and comment. However, the only thing that happened was the above mentioned telephone call.

As time passed by, I got increasingly worried that a last minute effort would be made without providing me with the opportunity to examine the changes in text and claims made by Mr. Martin. Sure enough, on the evening, or rather in the night of February 19, I received by fax a copy of about 60 pages of Mr. Martin's draft of the Patent Application, requesting me to proof read the same. No prior warning about that communication had been forwarded to me. I could as well have been out during that evening. As I recognized over 90 % or even a greater percentage of the draft text as my own wordings and sentences, it did not take me very long time to make the typographical corrections, and I was thus able to fax back all corrections needed. However, I got absolutely no chance to check the validity of the changes in the text and the new claims, which I assumed to be of high class, drafted by an attorney "with an International Reputation for Success", to use the wording of the ad in Inventors' Digest magazine. The Patent Application was filed the following day, on February 20.



About a week or 10 days later, I received a copy of the Patent Application plus the invoice. The covering letter and the copy of the Application are attached as Attachment 4. A comparison between my draft application and the Application prepared by Mr. Martin is provided at Attachment 6.

Responding to the Covering letter (at Attachment 5), third paragraph, re best mode, I made a quick check of the Application. The paragraph entitled "The Invention" in my draft had been changed to "Summary of the Invention", and did not include anything of the detailed explanation provided in my text. Thus I forwarded an e-mail comment about this, to which Mr. Martin responded with the below e-mail.

**Rick Martin <rmartin@patentcolorado.com> wrote:**

I edited out your discussions of prior art which if not perfectly accurate - could impair the validity of the patent. No deletion of what you do was made - even your homemade claims went in.

Rick Martin

At 07:52 PM 3/19/2004, you wrote:

Sic

I then studied the text of the Application in some detail, and found that this was true and that the specifications had been presented in a longer manner than the one I had proposed and under different headlines. For a moment I thought this was a better manner, as Mr. Martin, the successful attorney, had done it, and I even forwarded an e-mail, stating that I found the text "excellent". However, I was soon to find out that I had made a mistake by not studying the specifications and claims in detail.

To state, as Mr. Martin does in his Request for Withdrawal as Patent Attorney, "2) *Approved a spec and new claims, and now says he did not read them*" is really a cheap shot. I corrected the typographical errors I found, but did not spend the night between the 19<sup>th</sup> and the 20<sup>th</sup> of February, when the fax was transmitted, on analyzing the text of the specifications and the claims. If I would have done that, the filing would have been delayed beyond the 20<sup>th</sup> of February. As I was quite familiar with the patent examination process, having experienced changes and re-filings of my own applications, leading to patents, I knew that corrections could be made later on, and did not want to do anything that would delay the filing.

Mr. Martin makes it sound as if I had been provided with a copy of the specifications and claims in good time prior to the filing. As stated above, the true fact is that Mr. Martin had not provided anything for me to approve during the 9 days preceding the forwarding of his version of the Patent Application. If I would have entered into any arguments about the specs or the claims at the time they were presented, it would not have been possible to file the following day. I have come to believe that the ultimate day filing was made with intention in order to curtail arguments. This opinion seems to have been confirmed by Mr. Martin's response to some comments I made by e-mail. As can be seen from the below extract from our correspondence, he discouraged any further questions or comments by making them subject to a charge of \$ 30. As I had informed Mr. Martin in our initial correspondence, that my financial situation was a bit strained due to the cost of the treatment for cancer of my wife, he knew that this would have a limiting effect on my comments.

I will not spend your money evaluating whether you can file a preliminary amendment or a continuation in part. If you have not included your best way to practice the invention, then you need a CIP, before your invention. I charge a minimum of \$30.00 to reply to each email.

Sincerely,

Rick Martin

OK

I will not make any more remarks.

Oscar af Strom

Responding further to the letter, under cover of which the copy of the Patent Application had been forwarded, I attended to the missing items, i.e. had the formal drawings prepared and a professional English language translator attend to the text. He did not find any "foreign language errors" but, nevertheless, found a couple of typing errors and made a few recommendations related to the sequence of words, among others of Claim 1. Due to this, I had to check this claim, and found to my great surprise and disappointment that it has no relation whatever to my invention. I carefully tested the validity of the steps described, and found that none of them work. I sent illustrated proof of my conclusions in a registered letter to Mr. Martin that was dispatched on May 10, 2004. A copy of the letter is attached as **Attachment 6**. As I did not receive any reply, I sent an e-mail copy on June 8, I presume that this was the reason for Mr. Martin's Request for Withdrawal as Attorney.

Coming now to Mr. Martin's statements in the Request for Withdrawal as Attorney.

**1) Created rush to file on a non-existent provisional.**

As described above, the rush was created by Mr. Martin himself. In his offer he had accepted a nine day period to prepare and file a Patent Application with 20 claims. He wasted almost all of these 9 days on non essential matters. Furthermore, while I had not been able to provide the registration number, as I had misplaced the file, I had provided Mr. Martin with a copy of the letter at Attachment 2, page 2, and informed him that the PPA had been filed by my previous patent attorney, who had passed away. In view of this, it is in my opinion an insult to state that the PPA is non-existent, implying that what I stated is not true.

**2) Approved a spec and new claims, and now says he did not read them.**

As stated above, during the 9 days preceding the filing, I did not get a chance to see the specifications and claims drafted by Mr. Martin, and once the Patent Application had been filed, there was no rush to comment. Fourteen days later, when I got a copy of the Specifications and the claims, I stated that I thought it to be excellent, a great mistaken. Mr. Martin makes it sound like I had had the spec and the claims for a long time, without reading them. I read them soon enough, but I did not check the details until in March. Then I detected that Claim 1 was completely unrelated to my invention. Nevertheless, I had to check out the steps Mr. Martin had drafted, in particular his statement that the adhesive alone would migrate, when heated, which is a complete mistake, Then I wrote the letter at **Attachment 5**, based on my investigation, However, before sending it, I double checked my findings and conclusions, and also had one of my friends, a chemical engineer with Pemex, verify my investigation and my theory as to why the S-246 adhesive does not migrate without the presence of a plastic film. Before sending the letter, I had to be 100% sure that what I stated was correct and what Mr. Martin had stated was incorrect. Mr. Martin is a man with a big ego, and to contradict a person like that, one has to be very sure on what one says. I was very disappointed to find out that such an apparent expert could be so mistaken. This investigation took some time, and I did not get the letter forwarded until May 10. However, Mr. Martin makes it sound as if I had not read the claims until just before his request for withdrawal.

**3) Does not pay his bill on time**

I would first like to refer to the covering letter at Attachment 4, page 2, where it is stated "You need to begin a monthly payment plan of a least \$ 300 per month, plus drawing costs..." I accepted, telling Mr. Martin that I would have the drawings completed here in Mexico. (They have been forwarded to "Mail Stop Missing Parts") and pay \$ 300 per month. Nowhere was a paying date stated. For this reason, I have been paying at dates of the month most convenient for me, namely on March 8, April 1, May 05 and June 06. I attach as **Attachment 9** the BillPay copies for the period March - June, 2004. Please refer to "Rick" The bills, also

included in the attachment, usually arrive during the last week of the months. If Mr. Martin would have required the money on a certain day, I would have obliged his request. When not stated on an invoice that payment is expected by return of mail, or before a certain date, it is common business practice to pay within 30. days. I have paid within 15 days. For this reason, **Mr. Martin's statement is not true.**

**4) Demands re-work for free"**

I have not requested any re-work at all, and I am not planning to. All I have done is to write the letter at Attachment 6, pointing out that Claim 1, as drafted by Mr. Martin, has no relation to my invention. This surely implies that this claim has to be cancelled, rather than re-worked. Furthermore, it follows that Claims 2 - 6 also be cancelled. Without Claims 1 - 6, there are only Claims 7 - 9 left. These claims were not drafted by Mr. Martin. They are word by word Claims 1 - 3 of my draft application. Thus, there are 20 claims less than what Mr. Martin has offered to draft for \$ 2000. However, he is wrong in his assumption that I would demand this to be done by him for free. I would not, because I have read his claims 1 - 6 and this has caused me to completely lose my confidence in his ability to draft technical claims. Instead, I would request a refund of my payments. However, he did not give me a chance to demand this prior to his Request for Withdrawal. **Mr. Martin's statement that I have requested work for free is completely untrue.**

In this connection, I would refer to the invoice # 17798 of February 17, 2004, which has a charge entitled "Draft patent application from notes, drafts, calls and computer research. Then take a look at the draft at Attachment 3, the application filed at Attachment 4 and a comparison between the two at Attachment 5. Do you think that this statement is true?

I sincerely hope that your office will help me to get my money back. I noted that in the latest issue of Inventors' Digest, Mr Martin is not any more offering quality patents from \$ 2000. Instead, he now offers quality Provisional Applications for this amount.

.P.S.. The Notice to File Missing Parts includes the Statutory basic filing fee of \$ 385, a \$ 65 late oath and declaration surcharge and additional claim fees of \$ 43. Should this not have been paid by Patent Law Offices of Rick Martin in accordance with the initial offer to "draft 20 claims and file". Does not "file" include payment of filing fees? Nothing is stated about filing in the invoices.

**Attachment 3**

**Copy of Draft Patent Application, Covering Letter &  
Patentability Search Report and Opinion**

26 Pages



*Oscar & Maria Teresa af Strom*

afstrom@yahoo.com

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Tel/Fax 52-55- 5308-1575  
RefPTO40624

US Address

Apt. 325  
PO Box 60326  
Houston TX 77 205

24 June, 2004

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313—1450

Dear Sir or Madam:

Please find attached a copy of the NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION, together with a check in the amount of \$493.00, Declaration and Power of Attorney for Patent Application and drawings No. 1 – 17. in accordance with regulations. Drawings No 18 and 19 include color laser copies intended to show the difference in color intensity between two kinds of prints and transfers. For this reason, they have to be made in color. As I am unaware of the rules for how to display this as a patent drawings, I have included a sample for you to judge and advice me. If no rules for color drawings exist, these drawings should be eliminated. Due to a fault in the original numbering, a drawing No. 20 was listed and should be eliminated.

This invention has been protected by successive PPAs, the last one having been filed on my behalf by the late John D. Upham, Esq., approximately on February 20, 2003. In view of the fact that I have misplaced the receipt Mr. Upham sent me, I am unable to refer to that PPA in the Declaration and Power of Attorney For Patent Application.

I have reviewed the contents of the specifications and claims of the above application. I thereby detected that Claim No. 1 does not have any relation to my above invention. My invention, in a nutshell, consists of a composite sheet, having a support sheet, a plastic film and an adhesive with a liner. If such a sheet is applied with the adhesive in contact with an image on paper, and the laminate submerged, the paper may be "soaked off", to use an expression of the attorney. When the decal thus obtained is positioned with the image in contact with a substrate and heat is applied, the adhesive will migrate through the image layer, into the substrate. However, the composite sheet described in Claim No. 1 of the application filed by the attorney refers to an adhesive core between two liners, i.e. a transfer adhesive. When one liner of this kind of composite sheet is removed and the sheet is placed with the adhesive in contact with an image on paper, the paper cannot be soaked off without thereby destroying the laminate. Furthermore, even if it would be possible to make a decal in this manner, it would not be possible to apply this decal with heat, because the same adhesive as in my composite sheet does not migrate in this configuration. In my experience, this adhesive will only migrate when it is combined with a plastic film in the manner described on page 41, line 12 – page 42, line 18. which is the description I forwarded to the patent attorney. The adhesive's ability to migrate in this configuration is the very discovery for which I am applying for a patent.

The letter to me with the NOTICE TO FORWARD MISSING PARTS, and request to sign the Power of Attorney, was signed by the patent attorney on June 3, 2004. A week later, I received by Federal Express a copy of his REQUEST FOR WITHDRAWAL AS ATTORNEY, signed on June 10, 2004. I had not been provided with any warning whatever of his intentions in this respect. Furthermore the reasons for withdrawal given in his Request for Withdrawal are not completely correct.

In view of the above, I have been unable to declare that I am the inventor of the invention claimed in the

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Ref. Rick Martin 40208

*Calcola, Inc.*

"Oscar af Strom"<afstrom@yahoo.com>

US Address

Apt 325  
P.O. Box 60326  
Houston, TX 77205

8 February, 2004

Patent Law Offices of  
Rick Martin, P.C  
416 Coffman Street  
Longmont, Colorado 80501  
Tel/Fax 303-678-9953 & 1-800-575-8263

Dear Mr. Martin:

In accordance with your e-mail offer, please find enclosed a copy of the draft specifications, drawings and claims of

**SURFACE DECORATION BY MEANS OF RUBBER BASED HOT MELT TRANSFER  
ADHESIV**

I do also enclose a copy of the patent search result, as well as a check in the amount of US \$ 2000.00.

You are, of course, authorized to make any changes you deem necessary- If you have to change, I would, later on, appreciate to be told the reason, in order to learn more about the patenting process. .

I did not arrive at 20 claims in order to match your offer. I think that the first 10 claims are the important. There are several claims that I have included, because this seems to be the general custom in the US. For instance, those related to "releasable sheet" are, in my opinion, not needed, as I have only been using known methods. So if you think the invention is defendable without them, please delete them.

I have not produced any claims in respect of methods of obtaining the image on the paper, except for in Claim 9, because it is not a known method and is not self-explanatory. While one may include various surface decoration methods, by stating "indicia or images" does that not imply "obtained by whatever method available and not available at the moment". One could, of course, make one claim for each method known, such as hand painting, letterpress, offset, rotogravure, transfer prints, screen prints, flexography, color laser and photocopies, thermograph computer prints and digital prints, as well as any other method by which an image can be applied on paper. But firstly. If somebody invents a new method of printing, not mentioned, could he use the process? I think the answer is no. Furthermore, as I have clearly stated that the process lends itself for transfer of magazine and newspaper pictures, any method of obtaining such images should be covered, without having to be mentioned.

I think I did better with the drawings than "sketches", as I suggested. A draftsman, such as those advertising in ID, should be able to convert them rapidly. There are two figures which are not easy to display, Fig. 18 and 19. I made color laser copies, but they look

- 2 -

very much alike, as does the b&w copies. For this reason, I do also include the "originals." I look forward to your advice in that matter.

Knowing that you have to display the best mode, I have mentioned practically everything that I have learned since I came across the Fasson S-246 adhesive in 1997. While it is the best adhesive for image transfer and the most economical, to learn how to use it has been like riding a wild horse. I would have much preferred to keep the ingredients and manufacturing process secret. However, I don't want to loose my business, as I did in 1977, when Fasson refused to continue to manufacture the adhesive sheets we had agreed upon 5 years earlier. The reason was that one of their customers had obtained a patent that was in conflict. Some time, I will tell you more about this. I have heard that a "primer user" is today treated a bit better, but I do not want to take any chances. What about first to invent, if you cannot afford a patent application?

I wrote this letter yesterday and had enclosed a couple of small transfers. as well as an introduction kit. However, this morning it struck me that with Homeland Security and stricter customs, it might delay this package, so I took it out, and will send you some samples by ordinary mail...

With best regards and looking forward to your "first" progress report.

Sincerely



Oscar af Strom



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June 11, 2002

Mr. Oscar Strom  
Apt. 325  
P.O. Box 60326  
Houston, TX 77205

Re: Patentability Search Report and Opinion  
CENTRALIZED PEER-TO-PEER COMMERCE NETWORK  
Our Ref: 3-1150-023

Mr. Oscar Strom:

We have reviewed the patents that have been generated through the independent efforts of Patent Search International, Inc., during their research in the files of the United States Patent and Trademark Office relative to the subject matter of your above identified invention. This opinion is based solely on the above patents provided to us by Patent Search International, and we make no judgment regarding the accuracy of the search by Patent Search International.

The search conducted by Patent Search International developed the following U.S. Patent references:

3,344,012 3,607,525 3,967,021 4,440,590 4,544,590 4,685,984 5,098,772 6,153,038

In my opinion, the chances of obtaining patent protection for the invention are FAIR.

Although the patents provided by Patent Search International did not provide a showing of your concept, it should be understood that despite Patent Search International's best efforts, there may be other U.S. or foreign patents or printed publications, confidential patent applications, trade journal articles, treatises, or periodicals that may effect the patentability of your invention that were not located by its search due to their lack of availability. The United States patent system, alone, presently includes more than six million U.S. patents, which are classified and cross-classified within one or more classification areas. In addition, U.S. and foreign patent applications filed within eighteen months of the date of a search are treated as confidential and therefore are not searchable. Additionally, the ability to search the abstracts of trade journal articles, treatises, or periodicals, is limited due to their availability.



## **SURFACE DECORATION BY MEANS OF COMPOSITE SHEETS HAVING A LAYER OF RUBBER BASED HOT MELT TRANSFER ADHESIVE**

### **ABSTRACT**

Surface decoration by means of composite sheets and related processes for transfer of images to substrates. A composite image transfer sheet is prepared by combining a layer of rubber based hot melt transfer adhesive with a thermoplastic or thermosetting film which, if thin, may be attached to a releasable support sheet. The composite sheet thus derived is positioned with its adhesive surface in contact with the image to be transferred, which may be obtained by printing, copying or painting by hand on paper, preferably on the non coated side of one-side coated paper, on triple coated paper and on zinc oxide coated electrostatic copying paper, though any kind of paper will do. The laminate is submerged in water and the image paper base washed away. The decal thus obtained is positioned on the desired substrate and pressed at low temperature and with little pressure. This causes the adhesive to expand and migrate through the respective layers of printing inks, copy toners, paint and zinc oxide, thereby providing images transferred to fabric with the texture of the same, as well as a firm and machine washable anchorage. Decals obtained by this process may also be applied with adhesive, paint or varnish and may be provided with a white backing layer..

## **SURFACE DECORATION BY MEANS OF COMPOSITE SHEETS HAVING A LAYER OF RUBBER BASED HOT MELT TRANSFER ADHESIVE**

### **Background**

There are several methods of surface decoration.. These may be divided into methods for direct decoration and methods for indirect decoration. There are various known methods for indirect surface decoration. This invention relates to a method by which an image is first obtained on paper by known means and, thereafter, transferred from said paper to a composite sheet and from this to the desired substrate.

An indirect transfer of an image that has been printed, copied or painted on paper may be made in the following manner: First, a direct transfer of the image is made to an intermediate carrier, such as a plastic film. If the film is thin, it will be supported by a releasable sheet of paper or plastic, on which it has been applied by coating, extrusion or heat lamination. Such a sheet is known as a composite sheet, or intermediate carrier. When the image has been transferred to the composite sheet, it is next coated with an adhesive and, thereafter, positioned with the adhesive coated image in contact with the substrate.. When the adhesive has dried, the releasable support sheet will be removed. The transfer is now completed

The use of a composite sheet is a well known method- There are a number of variations of this method, such as those described in US Patent No. 344,012 - INTERMEDIATE CARRIER FOR TRANSFER OF PRINTED PICTURES; US Patent No. 3,607,525 - METHOD FOR TRANSFER OF A PICTURE FROM AN INITIAL SUPPORT TO A NEW SUPPORT; US Patent No. 3,985,602 - TRANSFER METHOD AND COMPOSITE SHEET THEREFORE; US Patent No. 4,685,984 - IMAGE TRANSFER METHOD & US Patent No. 5,032,449 - DECALS AND PROCESSES FOR TRANSFER OF IMAGES TO SUBSTRATES.

The transfer of the image to the composite sheet is dependent on the quality of the image paper backing, because the paper backing must be removed from the image, while this adheres to the composite sheet.. The latter of the above patents describes a method of transferring images from the non-coated side of a one-side coated paper, while at least one patent, not mentioned, describes a method of transferring a picture located on a paper with a clay coated surface. In the former patent, the non coated side serves as a release layer, while in the latter, the dissolution of the clay coating, when wet, provides the release. As a result, the paper may be peeled off, normally in large pieces. However, Ideally, the paper should be peeled off from the image in one piece.

It is known that the adhesives used for the transfer processes may consist of acrylic emulsions, polyamide or polyester fusible webs and plastisols. These may not only serve as adhesives, but also as plastic films. Accordingly, the image may first be coated with, e.g. a plastisol and, thereafter directly transferred to a release treated sheet, by application of heat. The laminate thus obtained may then be applied on the substrate by means of heat pressing. In this case, there is no need for an additional adhesive coating of the decal. The plastisol serves as adhesive as well as plastic film. Such transfers require high temperature as well as high pressure in order to become machine washable.

It is known that a pressure sensitive adhesive may be used for image transfer. The simplest manner in which such an adhesive may be utilized is by use of a plastic film coated with such an adhesive. The adhesive coated plastic film is applied with the adhesive in contact with the image to be transferred. The laminate is submerged in water. When the image paper backing has become saturated, it is peeled off, leaving the image adhering to the adhesive layer. If the image consists of lettering or is a line drawing, the sheet may be applied without any additional adhesive coating. When heated, the adhesive coating will migrate through the area of the image that does not have printing or copying indicia, giving the image carrying plastic film a good hold on the final surface. However, if the image is a full or half tone picture, an additional layer of adhesive will have to be added in order to make the decal stick to the substrate.

It is known that for indirect transfers, pressure sensitive coated composite sheets may be used. A typical composite sheet with a wet release and an acrylic pressure sensitive adhesive was specified in US Patent # 344,012, INTERMEDIATE CARRIER FOR TRANSFER OF PRINTED PICTURES. The US Patent Application did also include a dry release mode. However this was eliminated by the patent attorney at the time when the application had been approved and was to be published, the reason being that dry release had not been included in the original Swedish patent application. Notwithstanding, the Lift-a-Picture™ transfer sheets which were sold in USA between 1971 and 1977, were based on the original US patent application and utilized a silicone coated clear polyester film, supporting an acrylic film. This film was coated with an acrylic adhesive, protected by a silicone coated liner. A decal, using this sheet, was made in the following manner. The liner was removed and the transfer sheet, or a piece thereof, positioned with the adhesive in contact with the image. The laminate was then submerged in water. When the picture paper backing had become saturated, it was removed, and the image trimmed to the desired size. If the image consisted of lettering or was a line drawing, the decal was now completed. However, if it was a full or half-tone picture, a layer of adhesive had to be applied over the reverse image.

The above mentioned kits contained sheets of pressure sensitive transfer adhesive, with which a decal could be applied without heat. The first liner was removed and the sheet positioned with the adhesive in contact with the decal (reverse) image. The second liner was then removed and the decal positioned with the adhesive in contact with the substrate. Thereafter, the support sheet was peeled off. The transfer was then completed. However, if the transfer was applied on a fabric, leather or other material that could be pressed with an iron, it was covered with a silicone coated ironing paper and pressed for 20 seconds at "wool" temperature. This cured the bond and made the transfer machine washable. Transfers of lettering or line drawings were treated in the same manner. After a few seconds of cooling, the support film was removed. The transfer was now completed.

It is known that instead of using a composite sheet of the kind explained above, one may instead apply the adhesive and the plastic film in two distinct steps. Such a method was described in US Patent # 3,607,525 METHOD FOR TRANSFER OF A PICTURE FROM AN INITIAL SUPPORT TO A NEW SUPPORT. The adhesive that is specified in that patent is a so called transfer adhesive, a pressure sensitive adhesive located between two liners. The first liner has a release layer, usually a silicone coating, with less release force than the one of the second liner. The adhesive is manufactured in rolls, and the

rolls cut into sheets in accordance with the user's requirements. The adhesive is used as follows: The first liner is removed and the sheet positioned with the adhesive in contact with the image. The second liner is then removed and a plastic film, supported by a silicone coated paper, applied over the adhesive coated image with the film in contact with the adhesive. At that stage, the sandwich becomes identical with the one obtained with the composite sheet. The transfer is then completed in the manner described above. Transfer adhesives that are manufactured in great quantities, such as those used for labels, are available at lower prices than those produced in small quantities. They are a good choice for entrepreneurs, starting production in a small scale. Thus, such adhesives may not only be used for this second alternative, but also for the production of composite sheets.

While decals of half and full tone images, obtained with the above mentioned composite sheets, had to have a layer of adhesive added in order to adhere to substrates, this requirement was eliminated with composite sheets in accordance with US Patent # 3,985,602 - TRANSFER PROCESS AND COMPOSITE SHEET THEREFORE. The first version of this patent specifies a composite sheet of exactly the same kind that was described in the original patent application of the above mentioned US Patent # 3,344,012. The Lift-a-Picture transfer sheets, which were sold in the US between 1972 and 1977, were manufactured in accordance with that description. Having long experience with this kind of composite sheets, I can categorically state that the heat application specified in the first version of this patent does only works when the image consists of lettering or is a line drawing. On the other hand, with the second version of the composite sheet, having two plastic films, the image of decals may be fused without an adhesive layer applied to the decal image.

### **The Invention.**

This invention was conceived with a view of providing an easy and reliable process for surface decoration by means of image transfer, as well as products therefore. Furthermore, the intention has been to provide a process and a product that may be used by small scale business entrepreneurs, particularly in developing countries, such as craft producers, designers, T-shirt manufacturers, decal manufacturers and manufacturers of art reproductions. The aim has also been to make versions of the process and products available to consumers.

The processes and products of this invention are developments of the methods specified in the above mentioned US Patents # 3,334,012 and # 3,607,525, for the purpose of transferring images. These developments are mainly related to the use of a hot melt transfer adhesive, having a rubber base.

The main experiments and findings reported below have been carried out with a transfer adhesive of this kind, produced in the US by Fasson Roll, known as S - 246. In Mexico, where this adhesive is available from Avery Dennison de México, it is known as Adhesive # 071.. The other adhesive of that kind that I have worked with is manufactured in Mexico by ESAMEX, known by its specification code S67PS70086LAZI. Both versions are available in rolls..

The appearance of the rolls and the adhesive and the use of the same is almost identical

with the one of acrylic based pressure sensitive adhesives. Composite sheets for transfer of images, utilizing rubber based hot melt adhesive may be produced in the same manner as those mentioned in the background information, utilizing acrylic adhesive. The adhesive may also be utilized in the same or similar manner for the purpose of obtaining decals. However, here the similarity ends. This adhesive has a quality that other adhesives I have tested lack, namely the ability to migrate through layers, when heated.

There are two distinct manners to manufacture composite sheets. The first one is to have them made by a company having machines for coating. In this manner the coating will be tailor made for its purpose. However, this is a costly undertaking, and requires considerable economic resources. Furthermore, as the cost per unit is dependent on the quantity being manufactured, it would take quite some time to lower the costs sufficiently to be able to sell the sheets at a reasonable price. On the other hand, the S-246 transfer adhesive is being produced in great quantities and, for this reason, is available at a low price. Therefore, this invention has been devoted to manufacture of the composite sheets by lamination, using a hot melt adhesive with a rubber base, available as a transfer adhesive. As stated above, this adhesive may be obtained in rolls, making it possible to apply the adhesive on rolls of plastic films in a laminating machine. However, my experiments have been limited to sheet lamination of composite sheets, using a heat transfer machine.

The S-246 adhesive has a second liner that requires considerable force to peel off. For this reason, it becomes difficult to have some plastic films attached to a silicone coated release sheet, as the force required to release the same must be greater than the force required to release the S-246 adhesive second liner. Such sheets are not readily available in the market and have to be obtained by special order, which is a costly proposition. Therefore, I have tried various other known release methods, such as having the plastic film adhering to the support sheet by means of a removable adhesive. This works fairly well, provided the decal is not ironed-on at higher temperature than the one specified for nylon. Good results were obtained, using Fasson UR1 ultra removable adhesive. However, if the user applies the decal at too high a temperature, the removable adhesive will turn into a permanent adhesive, making it impossible to remove the support sheet at the end of the transfer process.

For the above reason, a wet release of the support sheet, using a water soluble adhesive, was tried. It works satisfactorily, but the sheets become easily curved and wrinkled, due to humidity. The solution to use packages such as those being used for water release decals was found impractical. Finally I tested what was to become the preferred mode, the non-coated side of a one-side coated paper, in accordance with US Patent No5,032,449 - DECALS AND PROCESSES FOR TRANSFER OF IMAGES TO SUBSTRATES. As will be seen below, the layers of coating and the weight of the paper will affect the time and quality of the release.

I have tried various qualities and gram weights, such as the Kimberly Clark de Mexico Lustrolito 1 c 75 g/sqm and 100 g/sqm. When heat laminated to a polyurethane film and submerged, these paper qualities release rapidly. The 75 g version will separate by itself and fall off the laminate after about 15 minutes of submersion. On the other hand, a 100g one side coated paper of Colombian origin with the trademark of Propalcot, also laminated to a polyurethane film, will adhere to the submerged laminate for several hours.

Notwithstanding, if pressed for 10 seconds with a wet cloth, it may be peeled off from the transferred image in one piece. In addition, the release qualities of these papers were tried on laminates with acrylic and polyethylene films. These laminates were obtained, as follows:

- a) Acrylic film: by applying acrylic emulsion with brush or roller over the paper non-coated side.
- b) Polyethylene film: by lamination of the film to the paper non-coated side by extrusion,

These laminations work well. For a consumer version of the composite sheet, intended for transfer of magazine pictures, the Propalcot 100 g/sqm one side coated paper, laminated to a 1 mil polyurethane film of a kind available from Deerfield Urethane, South Deerfield, MA, has proved to function very well. Such a composite sheet is made as follows:

- a) The paper is positioned with its non-coated side in contact with the polyurethane film, Heat and pressure is applied over the paper coated side, by pressing for 15 sec. at about 140 degrees. C.
- b) A layer of the S-246 transfer adhesive is applied over the polyurethane film and pressed for 15 seconds at about 140 degrees C.
- c) The sheets are trimmed to desired size.

A composite sheet of this kind is used as follows:

- a) Cut out the picture, leaving a slight margin all around. Also, cut out a similar piece of the composite sheet.
- b) Peel off the liner of the piece of the composite sheet, and position the piece with the adhesive in contact with the image
- c) Submerge the laminate until the picture paper backing becomes saturated. A couple of minutes for coated papers and several hours for pictures on recycled paper.
- d) Remove the picture paper backing. May be peeled off in large pieces from coated papers, and worked off from difficult paper qualities, such as recycled paper.
- e) Trim the "Iron-on" decal, which is now completed.

The decal may be applied immediately, or later on. In order to protect clear areas from getting tacky due to migration of the adhesive, the image surface should be rubbed with talcum powder and the decals placed in polyethylene bags

Application of decals on substrates that may be ironed, is made as follows:

- a) Positioned the decal with the image in contact with the desired surface.. Cover with a wet press cloth and press for 10 seconds with the iron preheated to "polyester" temperature. If it is a stored decal, it should first be submerged for a

couple of minutes.

- 
- b) Twist the decal and peel off the support paper. (The relatively low heat and short time will have caused the adhesive layer to expand and migrate slightly through the image layer of printing inks or copy toners, through the talcum powder layer, if any, into the subsubstrate, giving the same a slight hold to the substrate.
  - c) Cover the image with a silicone coated ironing paper and press for 30 - 40 seconds. Let cool. When cool. Remove the ironing paper. The transfer has been completed.

The second pressing will cause the adhesive to migrate further into the substrate, giving the transfer a firm hold that will withstands multiple machine washings. It is, of course, possible to press the decal for 40 seconds and remove the paper thereafter by pressing with a wet press cloth. However, this is not recommended, as prolonged pressing over the support paper may cause some of the coating pigments to transfer, causing whitish spots on the transfer surface.

A dry release decal may be produced in the same manner as this version, using a silicone coated paper for support instead of the one-side-coated paper. As stated above, the force required to peel off the silicone coated paper must be greater than the one needed to peel off the composite sheet adhesive liner. This kind needs only to be pressed for 30 seconds at a slightly higher temperature. After a couple of seconds of cooling, the silicone coated support paper may be peeled off. The transfer is then completed. This version is more costly to produce, as the required release paper is not available in the market and has to be produced for this purpose. Furthermore, this release paper must be water proof in order to make the submersion of the laminate possible..

While a silicone or other dry release system is difficult to include in a composite sheet, it is well suited for the divided process. The decal is prepared in exactly the same manner as described in US Patent No. 3,607,525. The application is the same as the one described above.

Application with adhesive does not involve anything new. The decal may simply be pasted to the substrate using adhesive, paint or varnish. A decal of this kind should have the 75 or 100 g Lustrolito support paper, which is easy to remove by application of a piece of wet cloth over its surface. It should only be used for "easy to transfer" pictures, such as most pictures located on clay coated paper.. While it is always better to wait until the adhesive has dried before removing the support sheet, I have found that in most cases, as soon as the adhesive has taken hold, the support paper may be removed. In addition to using this mode for applications on surfaces which are difficult to iron, water soluble school adhesives may also be used on surfaces suitable for heat application, e.g. by children too young to use an iron. An adult may, thereafter, press the transfer, which will then appear heavy and non-flexible. However, during the first washing the adhesive will dissolve and disappear, and the transfer will then look like any other transfer, though perhaps with a couple of wrinkles, which disappear with pressing. The fact that the transfer does not loosen is another proof of the fact that the adhesive even migrates through a layer of another adhesive.

A full fledged adhesive sticker may be obtained by application of transfer adhesive over

the decal image. The decal is produced in the following manner:

- a) Select a composite sheet with a 75 g or 100 g Lustrolito one-side-coated paper as a support paper.
- b) Prepare a decal in the manner described above. If the paper is difficult to remove and has to be submerged for a longer period than 10 -15 minutes, submerge it with the support paper resting on a piece of bond paper. This will prevent the support paper from falling from the laminate, even if in a stage of release..
- c) Place the decal on a release paper with the image in contact with the same. Cover with an ironing paper and press for 15 - 20 second with the iron preheated to polyester temperature. The pressing will cause the support paper to a re-adhere to the plastic film.
- d) Place the decal on a sheet of bond paper, image up. Apply a piece of transfer adhesive, slightly larger than the image, over the same. In order for the adhesive to stick well, 10 - 15 seconds of pressing over its liner is recommended.
- e) Trim the liner. The adhesive decal is now completed.

This decal is simple to apply, The liner is removed and the decal positioned with the adhesive image in contact with the substrate. The support paper is next moistened and peeled off. The transfer is completed. In the event that S-246 adhesive is being used, the transfer will become machine washable without pressing.. Furthermore, if the image was printed on a zinc oxide layer or on a white ink layer, as explained below, or printed with a white color backing, the decal may be applied on dark substrates. This is an economic manner to decorate light as well as dark substrates, without heat pressing. . .

The decal may also be converted into a removable sticker with modest adhesive strength, adequate for temporary applications. This is done in the following manner: The decal is positioned on a silicone coated release paper with the (reverse) image in contact with the release surface. The decal is, thereafter, pressed for 30 - 60 seconds, with the iron at "nylon" temperature, keeping the iron and sandwich completely still. Any movement would damage the image. After a period of cooling, the sticker is ready for application, the adhesive having expanded and migrated through the image layer, which has become sticky. When the sticker is to be applied, the liner, i.e. the silicone coated paper protecting the adhesive image, is peeled off and the sticker positioned on the desired substrate, to which it will adhere by its adhesive layer. The decal support paper is, thereafter, removed.

The above processes may be used for printed, copied, hand drawn and hand colored images, except prints in ink jet printers with water soluble ink.. While I have not yet designed a special paper for this purpose, I have discovered that ink jet prints which have be printed on zinc oxide coated electrostatic copying paper may be transferred, though only prints in black and dark colors transfer well. Light colors, reds and yellows in particular, will appear pale and weak on the paper as well as on the transfers. For this reason, the main use of such prints is for transfer of patterns and outlines, to be colored. Such coloring may be made before the transfer, using color pencils, crayons and



markers, or after completion of the transfer, using permanent markers, oils and acrylics.. The transfers are fully machine washable. Furthermore, as will be dealt with in connection with transfers to dark backgrounds, the zinc oxide coating may also be utilized for the purpose of providing decal images with a white background.

The composite sheet is, without doubt, the most important part of this invention. With it, it is possible to transfer practically any image located on paper. Thus, a person may be able to decorate his or her personal belongings with images found in magazines, newspapers and postcards as well as pictures that he or she have painted themselves, using the composite sheet and the transfer process in accordance with this invention.

Sometimes such transfers may become cumbersome and time consuming. This is the case when the image paper backing consists of recycled paper and, for this reason, is difficult to remove. For an amateur, this does not matter very much. Just let the laminate soak until the paper is completely saturated. However, for commercial applications, the process must be as simple as possible, as economic as possible and as fast as possible.

The composite sheet and the process for its use satisfy well the first two of these requirements. For the third requirement, speed of decoration, the speed and method of obtaining the image on the paper, as well as the speed of the transfer process proper, which is directly related to the quality of the paper, are the dominating factors. Offset printing or digital printing are the fastest methods, when quantity is involved. However, for artisans, use of a computer printer is also adequate, as is photocopying. Some artisans may wish to print the patterns, and paint them by hand, either before or after the transfer to the item to be decorated. As to the speed of the transfer, the paper quality is the most important factor and, for this reason, an important part of this invention.

For transfers to transparent substrates, where the transferred image is to appear equally transparent, the image to be transferred should be printed or copied on the non-coated side of a one-side-coated paper. Practically any kind of such a paper may be used. The "Lustrolito 1 c", 75g, 90g & 100g, papers, produced by Kimberly Clark de Mexico, have been successfully tested, as has a Colombian paper with the trademark of Propalcot. For transfers to light and semi-dark substrates, the new kind of coated papers with triple layers of coating, function very well. The semi-matte qualities of such a paper, in Mexico known as Super Polart Triple recubrimiento", produced by the Belgian company Burgo Ardennes has proved to provide excellent and rapid transfer of printed, copied and hand painted images. The white pigment of the coating provides the decal image with a semi-white layer, which makes possible applications to semi-dark surfaces..

The laminates of composite sheets and these papers, whether one-side coated or with triple coating, do only have to be submerged for a couple of minutes before the paper backing may be peeled off from the reverse image. After 20 minutes of submersion, the image paper backing will separate by itself and fall off, automatically turning the laminate into a decal. For commercial utilization of this invention, the image may be printed at high speed on the Polart Paper or on the one-side-coated paper, and the composite sheet successively applied with its adhesive side in contact with the printed images. The resultant laminate is, thereafter, dye cut and submerged. For a simple automatic process, the composite sheet as well as the paper should be in roll form. With such a process, several hundreds, even thousands of laminates may be produced per hour, depending on the size of the laminates. Thus, if 100 or 1000 dye cut laminates are

submerged, after 20 minutes and light rinsing, the 100 or 1000 laminates have been converted into decals, ready for instant application or application at a later period. In this manner, decals may be produced at a speed that is competitive with decals produced in laser photocopies. Instead of submersion in water, the image paper backing may be treated with steam, after which it may be peeled off. For this purpose, the laminate is placed on the working bench, image paper backing up, and covered with a wet press cloth. By pressing over the wet cloth for 10 seconds, with the iron at polyester temperature, the paper backing releases from the image and may be peeled off.. This works well, and a machine may be developed for this purpose. Until then, the optimum method for mass production of decals, in accordance with this invention, is to submerge the laminates, as mentioned above. . . .

Of the decals mentioned above, only those derived from pictures located on a white layer, such as a zinc oxide coating, may be applied on dark substrates. In addition to zinc oxide coated paper, a one-side-coated paper, or a triple coated paper may be given a printed layer of white ink., and images printed thereon may also be applied on dark substrates. The resultant decals, whether having a white layer of zinc oxide or layers of white printing ink, may lose some of the white of their background, and become darker, when heat pressed, as some inks or toners may migrate due to the heat. For this reason, either non migrant inks should be used, or the decal should be applied with adhesive, without heat pressing. .

Decals with images obtained on a zinc oxide coating or a printed white layer, to be ironed on to the substrate, ought to have a heavier layer of adhesive than other decals. For application of such decals, the adhesive has to migrate through a color layer, i.e. a longer distance than for any of the other above mentioned transfers. I have found that the standard layer of adhesive of the two transfer adhesives tested, having a thickness of about 1 mil, is satisfactory for transfers of prints and copies on papers others than zinc oxide coated paper or offset coated papers, which require two layers. Two layers is also recommended for transfer of newspaper pictures..

A transfer of an ink jet print on zinc oxide coated paper is made in almost the same manner as prints on other papers. A composite sheet with a double layer of adhesive is applied over the print. The sandwich is submerged for 5 - 10 minutes. The laminate is then placed on the working surface with the support paper down and zinc oxide coated backing paper up. If the ink is water soluble, the surface of the backing paper is then rubbed in order to prevent, as far as possible, that colors bleed and be absorbed by it. This paper is, thereafter, penetrated with a finger nail and peeled off. Finally, the decal is trimmed. It is then completed. The decal is applied in the same manner as other decals.

Water soluble ink jet color prints on the zinc oxide paper and transfers of the same appear pale and weak, especially reds and yellows. This may be utilized by painters for the purpose of making art reproductions. The various colors are still sufficiently visible to make it possible for somebody skilled in the art of painting and mixing oils or acrylics to be able to reinforce them, guided by a color print of the same picture on ink jet paper. The result may become a true reproduction of the original painting. This method may also be used for teaching purposes and by amateur painters, in a manner similar to painting by numbers. While the paint by number system utilizes numbered patterns printed on canvas or other substrates, this system utilizes colored patterns.

Application of decals on dark substrates is an important aspect of surface decoration and thus of this invention. As said above, one method is to print the image on the white layer of zinc oxide or on a paper with a printed white layer. For transfer of prints and copies which are not located on a white color layer, one known method, utilized in the above mentioned Lift-a-Picture kits, is to apply the decals by use of a white transfer adhesive. Unfortunately, white transfer adhesive is not generally available in the market and has to be specially ordered from one of the adhesive manufacturers, a costly proposition. A method, specifically developed for this invention is to provide a "White Background Paper". The first step of the manufacture of such a paper is to apply transfer adhesive over the zinc coating of an electrostatic copying paper, or over the white offset printing of a one-side coated paper or a triple coated paper, such as the Polart paper. The next step is to moisten the respective support papers and, when saturated, remove them, thereby exposing the white layer reverse side, to which the decal may be ironed-on. However, if the quality of the image colors are unknown, they might migrate, due to the heat. For this reason, it is better to combine the decal and the White Background Paper with adhesive. In order to do that, a second layer of transfer adhesive should be applied over the exposed white color layer, and the resultant laminate heat pressed in order to make the two layers of adhesive adhere well to the white color layer. The second liner of the last applied adhesive is then removed, and the decal pressed down with the image in contact with the adhesive. The decal is then applied as an adhesive decal in the manner described above, i.e. by removing the second liner of the (first applied) transfer adhesive, pressing down the decal in the desired position on the substrate and, finally, wetting and removing the decal support paper.

If the S-246 adhesive has been used, the transfer, if applied on fabric, will become machine washable. There is no need for heat pressing. However, any wrinkles that may develop may be leveled out by ironing at rayon or silk temperature. Higher temperatures may cause some of the darker colors to migrate and give the image a darker tone. By use of the White Background Paper, any decal in accordance with this invention may be applied for decoration of dark as well as light surfaces.

### Drawings

The below drawings are cross sections of successive stages of the transfer processes, showing the details of the elements being processed. Dimensions are not to scale, and the thickness of cross sections are greatly exaggerated. The adhesive of all adhesive layers shown in the figures is hot melt rubber based adhesive, referred to as adhesive only.

Fig. 1 shows the cross section of a sheet of transfer adhesive.

Fig. 2 shows the cross section of a sheet of paper with an image on its surface.

Fig. 3 shows the cross section of a plastic film supported by a sheet of one-side-coated paper.

Fig. 4 shows the cross section of a plastic film supported by a silicone coated sheet...

Fig. 5 shows a cross section of a composite sheet of the preferred version, the plastic film

of Fig 3 supported by a one--side-coated paper. having been applied over the adhesive of Fig. 1.

Fig 6 shows the cross section of the laminate of the composite sheet of Fig. 5, positioned with its adhesive layer in contact with the image of Fig. 2.

Fig. 7 shows the cross section of the laminate of Fig. 6, the image paper backing having been completely removed and the decal completed.

Fig 8 shows the cross section of the decal of Fig. 7 being applied over a substrate.

Fig. 9 shows the cross section of the first face of the heat application of the decal of Fig. 8, the decal support sheet being removed.

Fig. 10 shows the cross section of the removal of the silicone coated release paper of the decal of Fig. 9, at completion of the image transfer.

Fig. 11 shows the cross section of the decal of Fig. 7 with a layer of transfer adhesive applied over the decal (reverse) image.

Fig. 12 shows the cross section of a zinc oxide coated electrostatic copying paper.. *3 Fig 11 → Fig 12 rec applied*

Fig. 13 shows the cross section of a layer of white ink applied on the surface of a triple coated printing paper- *4*

Fig. 14 shows the cross section of a layer of transfer adhesive applied over the zinc oxide coating of the electrostatic copying paper shown in Fig. 12..

Fig. 15 shows a cross section of the laminate of Fig. 12 or Fig. 13, the white layer support paper of the sheets having been removed, exposing the white zinc or white printing ink layer.. *a white background sheet*

Fig 16 shows a cross section of the laminate of Fig. 15, a layer of transfer adhesive having been applied over the exposed white zinc oxide or printing ink layer.

Fig. 17 shows a cross section of the laminate of Fig. 16, the liner of the last applied transfer adhesive having been removed and the laminate applied over the (reverse) image of the decal shown in Fig.7.

Fig. 18 shows a cross section of the laminate shown in Fig. 17, the liner of the first applied transfer adhesive having been removed and the decal applied on a dark substrate.

Fig. 19 shows a plane view of an ink jet print of an art reproduction printed in an ink jet printer on a white ink jet printing paper.

Fig. 20 shows a plane view of an ink jet print of the art reproduction, shown in Fig. 19, printed in an ink jet printer on a zinc oxide coated electrostatic copying paper.

### Detailed Description.

Fig. 1 shows the cross section of a transfer adhesive in accordance with this invention. The rubber based hot melt adhesive (1) is located between the liner (2) with the silicone layer (3a) and the liner (4) with the silicone layer (3b). The force required to peel off release layer (2) is less than the one required to peel off liner (4).

Fig. 2 shows the cross section of an image (5) located on the surface of a paper (6), which may be a bond paper or a coated paper. The image may be derived by any known printing, copying or coloring method, except for methods using water soluble inks or coloring media, such as those used in ink jet printers. For transfer of ink jet prints in accordance with this invention, a zinc oxide coated electrostatic copying paper has to be used, as shown in Figures .19 & 20.

Fig. 3 shows the cross section of a plastic film (8) supported by a one-side coated paper (7), which has been heat laminated to the film with its non-coated side in contact with the same. The film (6) may also be coated, or extruded over said non-coated side. Good results have been obtained by roller application of a 46 % acrylic emulsion manufactured by Rohm & Haas as emulsion "B60A". Successful tests have been made with polyethylene film extruded over a 75 g one-side-coated paper, to be used for other purposes. For transfer of images located on coated papers, needing little time of submersion, the preferred laminates have been obtained with a 75 g/m<sup>2</sup> one-side-coated paper, produced by Kimberly Clark of Mexico S.A. de C.V, known as Lustrolito™, "una cara", laminated to various polyurethane films produced by Deerfield Urethane, Inc. This laminate is the preferred version of a composite sheet. for transfer of images located on coated papers. However. the support paper is only required for thin plastic films, Heavier films do not require a support sheet. On the other hand, for transfer of images located on tough paper qualities, such as recycled papers, a one-side -coated paper with a water resistant coating will be required. One paper of this kind is produced in Colombia and marketed in Mexico by Papel S.A. under the trademark of Propalcot.

Fig. 4 shows the cross section of a plastic film (8) supported by a silicone coated liner (2), to which it has been heat laminated with the silicone coating (3 a) in contact with the plastic film. This laminate is the preferred one for the two-step application of a composite sheet over an image. It may also be used for composite sheets.

Fig. 5 shows the cross section of the preferred plastic film laminate of Fig. 3 positioned with the plastic film (8) in contact with the adhesive (1), stripped of the liner (2) ahead of the lamination. I have found that an extruded polyethylene film may be attached to the adhesive, without heat, while the polyurethane and acrylic films require low heat pressing. The three mentioned films are examples of films which have been thoroughly tested for transfers of images in accordance with this invention. However, thermoplastic as well as thermosetting films to which the adhesive adheres, may also be used, e.g. mylar & vinyl films, both of which have been successfully tested for adhesion

Fig. 6 shows the cross section of the laminate of Fig 5 positioned with the adhesive (1), stripped of its second liner (4), in contact with the image (5). No heat and little pressure is needed. In respect of the latter, it is recommended that for the consumer version of a transfer kit, the laminate be rubbed over the support paper (7) with an applicator, such

as a tongue depressor, prior to being submerged..

Fig. 7 shows the cross section of the completed decal, following removal of the image paper backing of the laminate shown in Fig. 6.

Fig. 8 shows the cross section of the decal of Fig. 7 applied over a substrate.

Fig. 9 shows the cross section of the decal of Fig 7, applied over a substrate, having been pressed for 10 seconds, covered with a wet press cloth, at polyester temperature. The steam created by the pressing has caused the bond between the support paper (7) and the plastic film (8) to loosen and the heat has caused the adhesive (1) to migrate through the image (5), slightly in to the surface of the substrate. By twisting the decal slightly, it will separate completely. and may now be peeled off, as indicated

Fig. 10 shows the cross section of the completion of the transfer, commenced in Fig. 9- After removal of the composite sheet support paper, as shown in Fig. 9, the decal has been covered by a silicone coated release paper (10) and pressed for 40 seconds at the same polyester or slightly higher temperature. This has caused the adhesive (1) to migrate further into the substrate, giving the transfer a firm hold. In such a manner, transfers to fabric become completely machine washable. When cool, the silicone coated ironing paper (10) is peeled off. The transfer has been completed, and the surface decorated accordingly. ..

Fig. 11 shows a cross section of an adhesive decal, obtained by covering the (reverse) image (5) of the decal shown in Fig. 7, with a layer of transfer adhesive (1), its second liner (4) still covering the adhesive surface.

Fig. 12 shows a cross section of the adhesive decal shown in Fig. 11, stripped of its liner and applied over a substrate (9). In accordance with this invention, the S-246 adhesive is to be used. As a result, the transfer will be fully machine washable without having been heat pressed.. Furthermore, if the decal image (5) has been derived from an image located on a white color layer, such as a zinc oxide layer, or a white layer printed on a triple coated paper, or it was printed with a white color backing, the transfer will have a white backing. For this reason, such decals may be applied on dark substrates..

Fig. 13 shows the cross section of a zinc oxide coated electrostatic copying paper. The zinc oxide layer (12) is attached to the support paper (11), from which it may be released after a few minutes of soaking. The zinc oxide layer lends itself to printing in an ink jet printer, in particular for printing of patterns as well as for subsequent painting with color pencils, crayons or markers. Black inks should be used when the pattern is supposed to be visible. However, when it is to be invisible, it may be printed in other colors, as required. As mentioned above, decals derived from images printed on the zinc oxide layer (12) will have this layer as a background layer and may, for this reason, be applied on dark substrates.

Fig. 14 shows the cross section of a triple coated paper (15). A white color layer (13) has been printed on top of the triple coating layer (14). Mechanically, this laminate functions in the same manner as the one of Fig. 13, i.e. the support paper 15 will release after a few minutes of submersion. Decals derived from images printed on the white color layer

(13) will have this layer as a background and may, for this reason, be applied on dark substrates.

Fig. 15 shows the cross section of a "White Background Sheet. This sheet has been obtained by provision of layers of transfer adhesive on both sides of the zinc oxide coating (12), shown in Fig. 13, or the white printing ink layer (13), shown in Fig. 14. This laminate has been obtained by first applying the transfer adhesive (1a) over the zinc oxide layer (12) or the white printing ink layer (13). The support paper (11) or (15), respectively, was, thereafter, removed, exposing the respective layers' reverse side. This may be achieved by a few minutes of wetting of the support paper by steam or by a wet cloth or by submersion. After a period of drying, the transfer adhesive (1b) was applied on the white layer reverse side, and the laminate heat pressed in order to secure that the two adhesive layers have been well combined with the white color layer. This laminate may be used for the purpose of providing decals with a white background, as shown in Fig. 16.

Fig. 16 shows the cross section of an adhesive decal with a white background. The White Background Paper shown in Fig. 15 was stripped of the liner (4b) over the transfer adhesive layer (1b) and applied with the adhesive layer (1b) in contact with the decal (reverse) image (5). While the two liners over the layers of transfer adhesive originally had the same properties, the moistening of the laminate in order to remove the support paper has increased the force required to remove the liner (4a). For this reason, the liner (4b) is the first one to be removed.

Fig. 17 shows the cross section of the adhesive decal with a white background applied over a substrate (9). The decal liner (4a) was first removed, and the decal applied with the adhesive (1a) in contact with the substrate (9). In accordance with this invention, the S-246 adhesive is to be used. This will make transfers to fabric machine washable without heat pressing.

Fig. 18 shows a plane view of a painted image, printed in an ink jet printer with water soluble inks, on a white ink jet paper.

Fig. 19 shows a plane view of the same painted image, printed in an ink jet printer with water soluble inks, on the zinc oxide coating of an electrostatic copying paper. As will be seen, the colors of this print are pale and weaker than those of Fig. 18. A transfer to canvas will have about the same colors. This may be utilized for painting of art reproductions, and for teaching. The image on the zinc oxide layer already has the color pattern, though pale and weak. In order to obtain a good reproduction, the colors have to be reinforced. The master painter knows how to do that, and the result of his efforts will become a true reproduction. The student will learn to paint, by reinforcing the colors in accordance with the instructions provided by the teacher.

### Examples

Ex. 1. A color laser copy on a triple coated paper was to be transferred to canvas. The picture was cut out with a slight margin and placed on the ironing paper, face up. A similar piece of a Composite Sheet was also cut out. The liner was removed and the sheet positioned with the adhesive in contact with the image. The Transfer Paper printed support paper was then rubbed with a squeegee, after which the laminate was

submerged. After a few minutes of soaking, the image paper backing was peeled off, and the reverse image trimmed. The decal had now been completed, ready for immediate application, or for application later on. The decal was positioned on the sheet of canvas, covered with a wet press cloth, and pressed for 10 seconds at "polyester" temperature. The press cloth was then removed, the resultant transfer twisted lightly and the decal support paper peeled off. The decal was, thereafter, covered with a silicone coated ironing paper and pressed for 40 seconds at the same temperature. When cool, the ironing paper was removed. The transfer had now been completed.. ..

Ex. 2. A magazine picture was to be transferred to a T-shirt.. The picture was cut out and placed on the Ironing Paper, face up. A similar piece of a Composite Sheet was also cut out. The liner was removed and the Composite Sheet positioned with the adhesive in contact with the image. In order to secure good contact, the laminate was then rubbed with a squeegee. It was thereafter submerged in water. . After 1 hour of soaking, the laminate was removed and placed on the working surface with the image paper backing up. The saturated paper backing was then peeled off and the reverse image completely cleaned. The laminate reverse image was, thereafter, trimmed. The decal had now been completed, ready for immediate application or application later on. The application was completed in exactly the same manner described above.

Ex. 3. A visitor of the Internet home site of an art supply manufacturer downloaded the pattern of an image and printed the same in an ink jet printer on the zinc oxide coated paper. A similar piece of a Composite Sheet was also cut out. The printed pattern was, thereafter, colored, using permanent markers for all but one of the colors, which was colored with crayons. The painting was placed on the Ironing Paper and the piece of the Composite Sheet applied over the same. The laminate was then submerged for 10 minutes, after which the zinc oxide layer support paper was peeled off and the image trimmed. The decal had now been completed, ready for immediate application or application later on. The application was made in the same manner as explained in Ex. 1

Ex. 4. A decal manufacturer printed images to be applied on windows, on sheets of 75 g one-side coated paper. Composite Sheets of the corresponding size were cut out and applied over the images and the laminates dye cut, submerged and recovered when the image paper backings had loosened and fallen off. The iron-on decals obtained were cleaned and dried, whereafter they were placed on sheets of bond paper, face up, and covered with ready cut pieces of S-246 transfer adhesive, which was pressed down over the exposed reverse images. The laminates were lifted up, excess adhesive remaining on the sheets of bond paper, and overlapping liners trimmed off. The resultant adhesive decals were stored in polyethylene bags, ready for application.

Ex. 5. A decal manufacturer printed images for adhesive application on dark substrates, on sheets of triple coated paper, which had first been printed with three layers of white ink on top of each other. Composite Sheets were cut out and applied over the images. The laminates were dye cut, submerged and recovered when the images paper backings had loosened and fallen off. The basic decals thus obtained were placed on a teflon coated surface, face up, and covered with sheets of s-246 transfer adhesive, pressed down over the exposed reverse images. The laminates were trimmed, and the completed decals placed in polyethylene bags, ready for application.



What is claimed is:

1. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:
  - ::
  - a) combining a releasable support sheet with a plastic sheet;
  - b) stripping said transfer adhesive of its primary liner and placing the combined sheet obtained in step a) with its plastic surface in contact with the tacky adhesive surface..
  - c) stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.
  - d) obtaining an "iron on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
  - e) applying the decal obtained in Step d) by positioning the same with the image or indicia in contact with said surface.
  - f) applying heat over the releasable support sheet, thereby causing said adhesive to expand and migrate through the layer forming the image or indicia, into said substrate.
  - g) stripping the decal of said releasable support sheet
2. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:
  - a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the indicia or image bearing layer of said paper;
  - b) combining a releasable support sheet with a plastic sheet;
  - c) stripping said adhesive of its secondary liner and placing the combined sheet obtained in step b) with its plastic surface in contact with the tacky surface. of said paper.
  - d) obtaining an "iron-on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
  - e) applying the decal obtained in Step d) by positioning the same with the image or indicia in contact with said surface.
  - f) applying heat over the releasable support sheet, thereby causing said adhesive to expand and migrate through the layer forming the image or indicia, into said substrate.
  - g) stripping the decal of said releasable support sheet
3. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes
  - a) combining a releasable support sheet with a plastic sheet;
  - b) stripping said transfer adhesive of its primary liner and placing the combined sheet

- obtained in step a) with its plastic surface in contact with the tacky adhesive surface.
- c) stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.
  - d) obtaining an "*iron-on decal*" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
  - e) converting the iron on-on decal obtained in Step d) into an "*adhesive decal*" by stripping a second piece of said transfer adhesive of its primary liner and positioning the decal obtained in Step d) with its indicia or image surface in contact with said transfer adhesive exposed tacky surface.
  - f) stripping the adhesive decal obtained in Step e) of its liner and positioning the same with the exposed adhesive in contact with said surface..
  - g) stripping the decal of said releasable support sheet
4. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes.:
- a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the indicia or image bearing layer of said paper;
  - b) combining a releasable support sheet with a plastic sheet;
  - c) stripping said adhesive of its secondary liner and placing the combined sheet obtained in step b) with its plastic surface in contact with the tacky surface of said paper.
  - d) obtaining an "*iron-on decal*" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
  - e) converting the iron on-on decal obtained in Step d) into an "*adhesive decal*" by stripping a second piece of said transfer adhesive of its primary liner and positioning the decal obtained in Step d) with its indicia or image in contact with said transfer adhesive exposed tacky surface.
  - f) stripping the adhesive decal obtained in Step e) of its liner and positioning the same with the exposed adhesive in contact with said surface..
  - g) stripping the decal of said releasable support sheet
5. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:
- ::
- a) combining a releasable support sheet with a plastic sheet;
  - b) stripping said transfer adhesive of its primary liner and placing the combined sheet obtained in step a) with its plastic surface in contact with the tacky adhesive surface..
  - c) stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.
  - d) obtaining an iron-on decal by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or

indicia retained in the composite sheet.

- e) applying an adhesive layer over said indicia or image and/ or over said surface.
  - f) positioning said decal with the indicia or image in contact with said surface
  - f) Stripping the decal of said releasable support sheet..
6. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes.:
- a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the indicia or image bearing layer of said paper.
  - b) combining a releasable support sheet with a plastic sheet;
  - c) stripping said adhesive of its secondary liner and placing the combined sheet obtained in step b) with its plastic surface in contact with the tacky surface of said paper.
  - d) obtaining an "*iron-on decal*" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
  - e) applying an adhesive layer over said indicia or image and/ or over said surface.
  - f) positioning said decal with the indicia or image in contact with said surface
  - f) Stripping the decal of said releasable support sheet..
7. A process for decoration of dark surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:
- a) applying a white color layer by printing or coating or other known means over the surface of a triple coated paper.
  - b) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with said triple coated paper's white surface, obtained in Step a).
  - c) washing said white layer-including composite sheet in water to soften the paper and removing the same, thereby exposing the white layer retained in the composite sheet.
  - d) obtaining a "*white color transfer sheet*" by stripping a second piece of said transfer adhesive of its primary liner and positioning the composite sheet obtained in Step c) with its white surface in contact with said second piece of transfer adhesive exposed tacky surface..
  - e) obtaining a "*white background adhesive decal*" by stripping said "white color transfer sheet" of the secondary liner of said second piece of transfer adhesive and positioning any of the iron-on decals obtained in Steps d) of Claims 1 -6 with its indicia or image in contact with said "white color transfer sheet" exposed tacky surface.
  - f) stripping the white background. adhesive decal of its liner and positioning it with the exposed tacky surface in contact with said dark surface.
  - g) Stripping the decal of said releasable support sheet..
8. A process for decoration of dark surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes
- a) stripping said transfer adhesive of its primary liner and positioning it with its tacky

- surface in contact with the white zinc oxide surface of an electrostatic copying paper.,
- b) washing the white layer-including composite sheet obtained in Step a) in water to soften the paper and removing the same, thereby exposing the white layer retained in the composite sheet.
  - c) obtaining a "*white color transfer sheet*" by stripping a second piece of said transfer adhesive of its primary liner and positioning the composite sheet obtained in Step b) with its white surface in contact with said second piece of transfer adhesive exposed tacky surface..
  - d) obtaining a "*white background adhesive decal*" by stripping said "white color transfer sheet" of the secondary liner of said second piece of transfer adhesive and positioning any of the iron-on decals obtained in Steps d) of Claims 1 -6 with its indicia or image in contact with said "white color transfer sheet" exposed tacky surface.
  - e) stripping the white background. adhesive decal of its liner and positioning it with the exposed tacky surface in contact with said dark surface.
  - f) Stripping the decal of said releasable support sheet.
9. A process for decoration of surfaces with hand painted art reproductions through transfer of copies of paintings from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:
- a) obtaining a computer image of said copy of a painting
  - b) obtaining an ink jet print of said computer image on the zinc oxide surface of an electrostatic copying paper.
  - c) obtaining a print of said copy of a painting on an ink jet paper, or through other means...
  - d) obtaining a weak image, though true in color, by transferring said ink jet print to said surface, utilizing any of the processes defined in Claims 1 -8.
  - e) with the true copy as a guide, reinforcing the colors of said weak image through painting with oils, acrylics or art markers.
10. Processes in accordance with Claims 1 - 8 wherein said plastic sheet is formed of a thermoplastic resin.
11. Processes in accordance with Claims 1 - 8 wherein said plastic sheet id formed of a thermosetting resin.
- 12 Processes in accordance with Claims 1 - 8 wherein said plastic sheet is self supported.
- 13 Processes in accordance with Claims 1 - 8 wherein said releasable support sheet is a one-side coated paper
- 14 Processes in accordance with Claims 1 - 8 wherein the releasable support sheet is a silicone coated paper.
15. Processes in accordance with Claims 1 - 8 wherein the releasable support sheet is a sheet of polyethylene.

16. Processes in accordance with Claims 1 - 8 wherein the releasable support sheet is a paper coated with a removable or dissolvable adhesive.
17. Processes in accordance with Claims 1 - 8 wherein said paper consists of a triple coated paper.
18. Processes in accordance with Claims 1 - 8 wherein said paper consists of a zinc oxide coated electrostatic copying paper.
19. Processes in accordance with Claims 1 - 8 wherein a white color layer has been applied on the surface of said paper in order to serve as background of said indicia or image.
20. Processes in accordance with Claims 1 - 8 wherein said paper consists of photo quality ink jet printing paper.

I did not arrive at 20 claims in order to match your offer. Those related to "releasable sheet" are, in my opinion, not needed, as they are all known and more or less self explanatory. So if you think the invention is defendable without them, please delete them. Furthermore, I have not produced claims in respect of method of obtaining the image on the paper, except for in Claim 9, which is not self-explanatory.. One may include various surface decoration methods. However, to me "indicia or images" covers them all, including hand painting, letterpress, offset, rotogravure, transfer prints, screen prints, flexography, color laser and photocopies, thermograph computer prints and digital prints.

February 7, 2004

  
Oscar A. Strom  
Inventor

Fig. 1

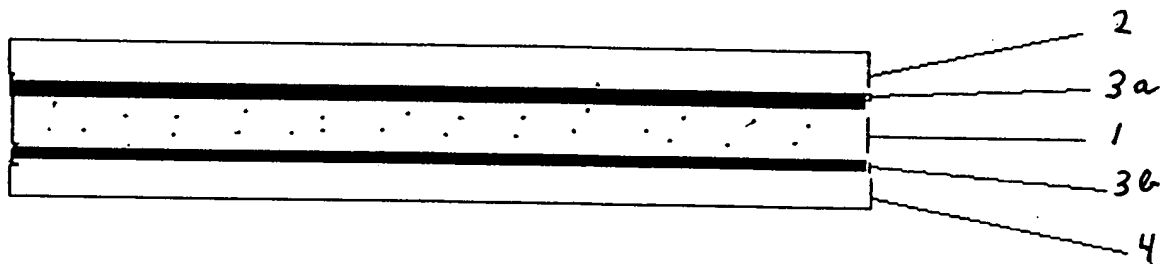


Fig. 2

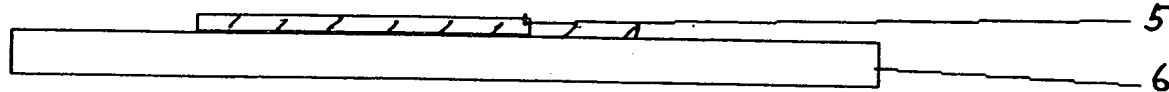


Fig. 3

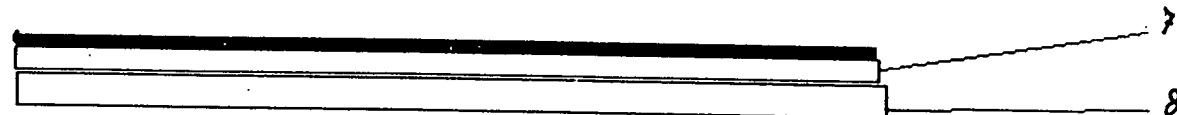


Fig. 4

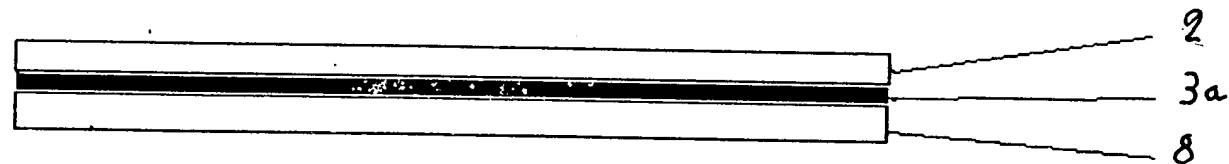


Fig. 5

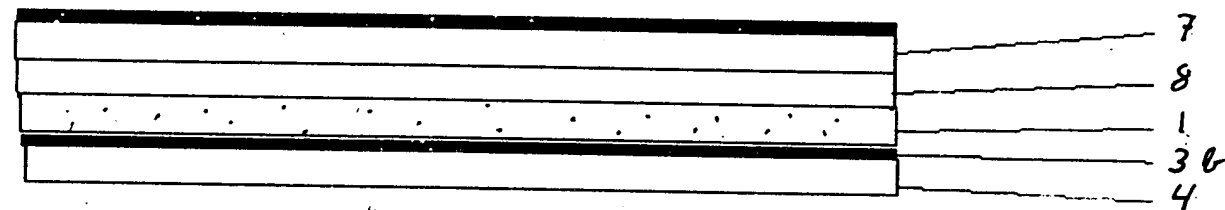


Fig. 6

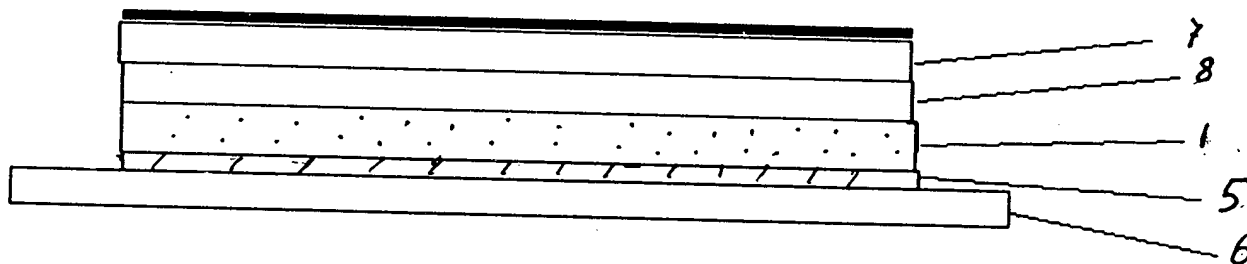


Fig. 7

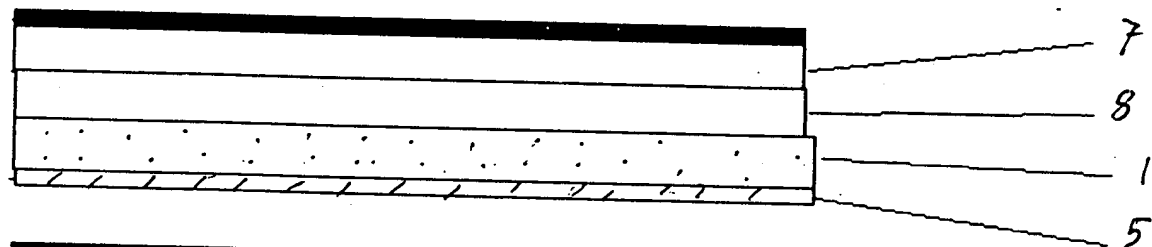


Fig. 8

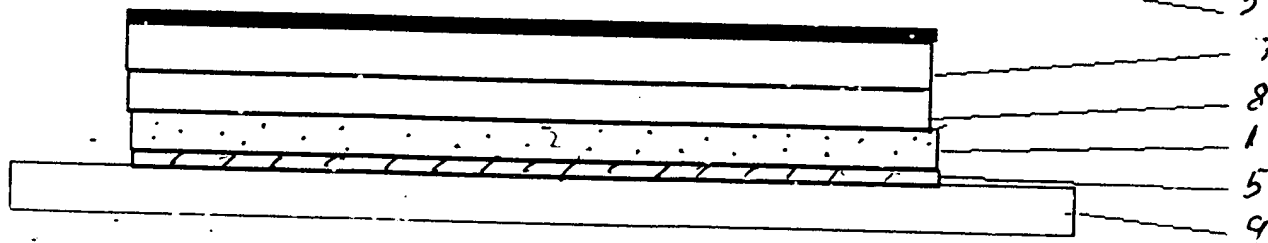


Fig. 9

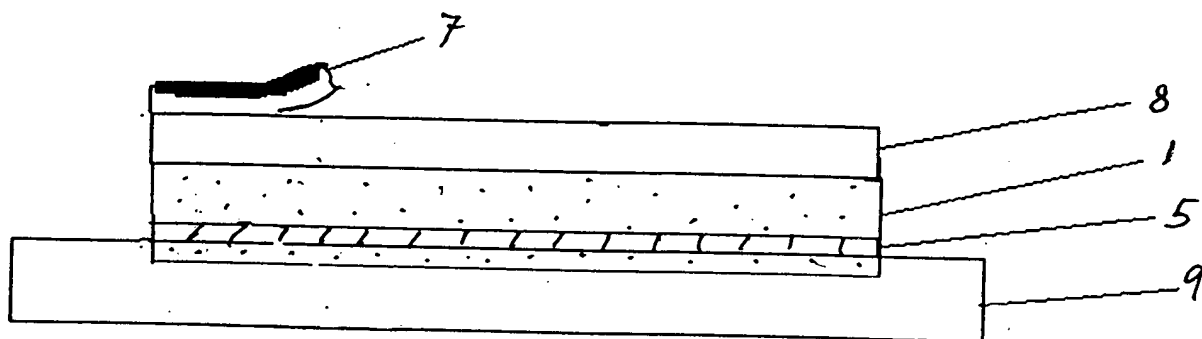


Fig. 10

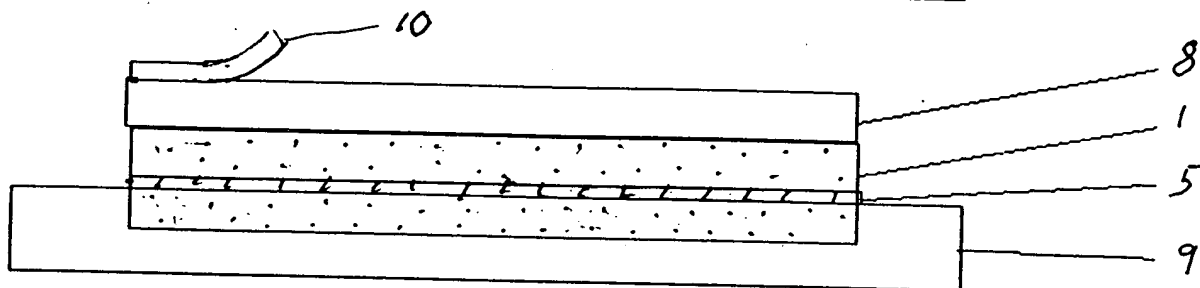


Fig. 11

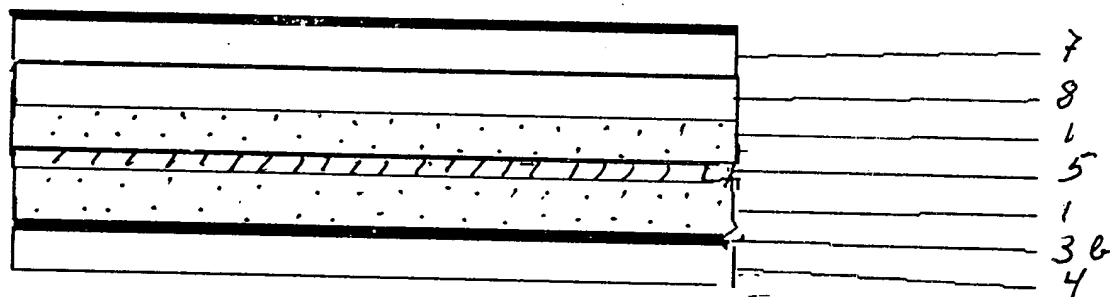


Fig. 12

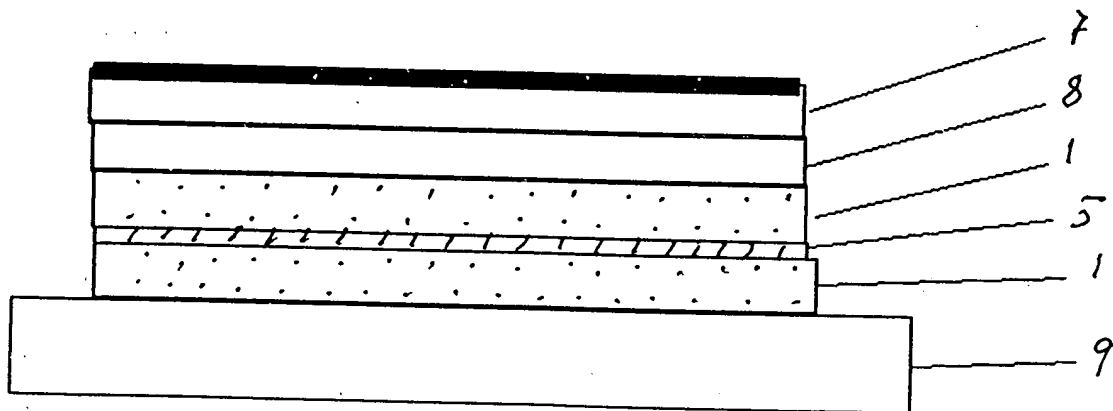


Fig. 13

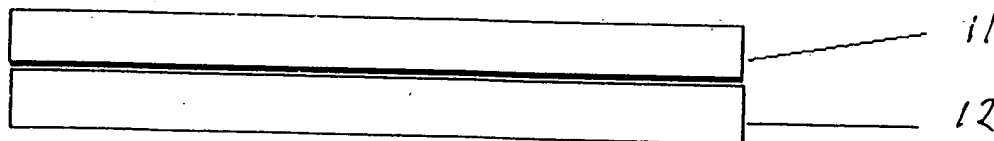


Fig. 14

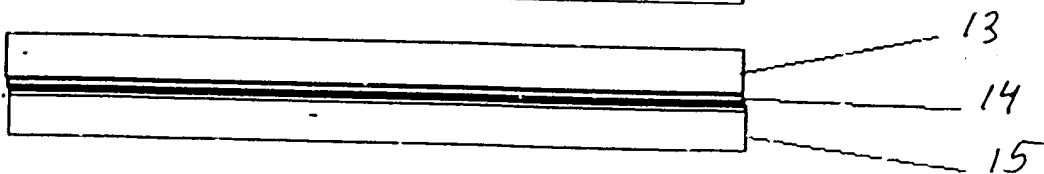


Fig. 15

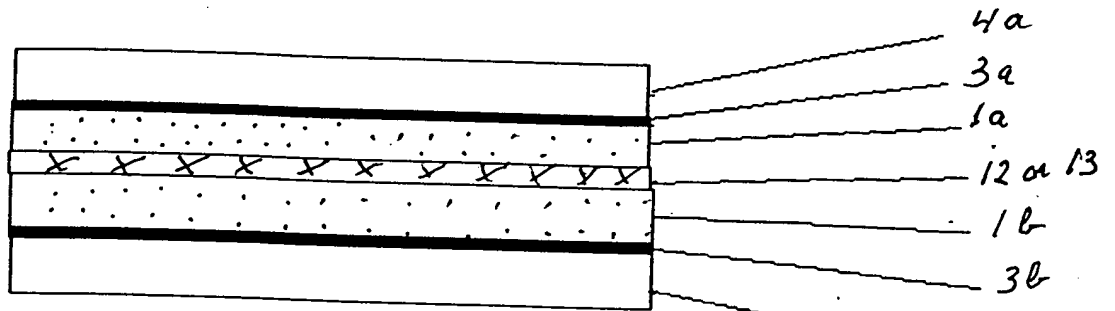


Fig. 16

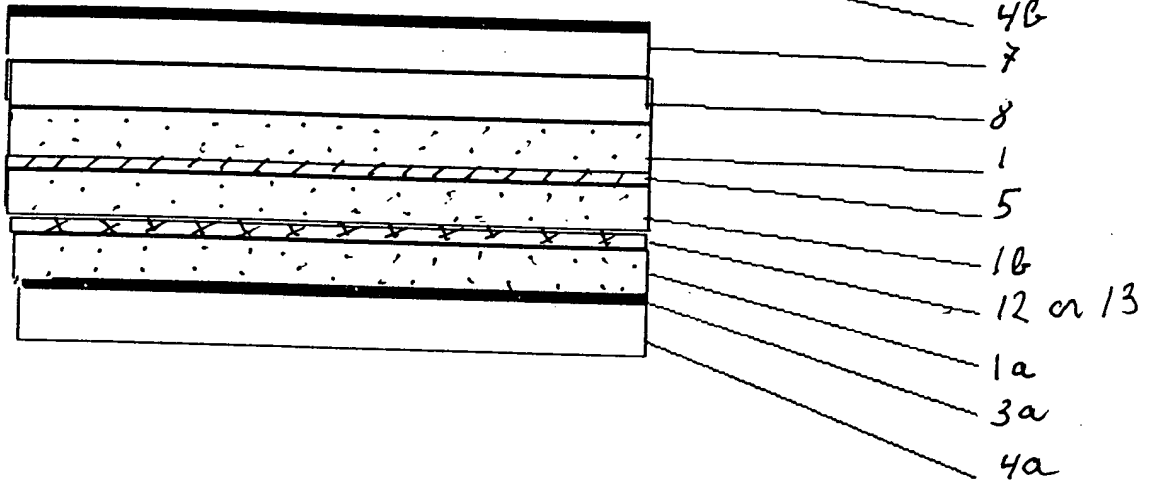


Fig. 17

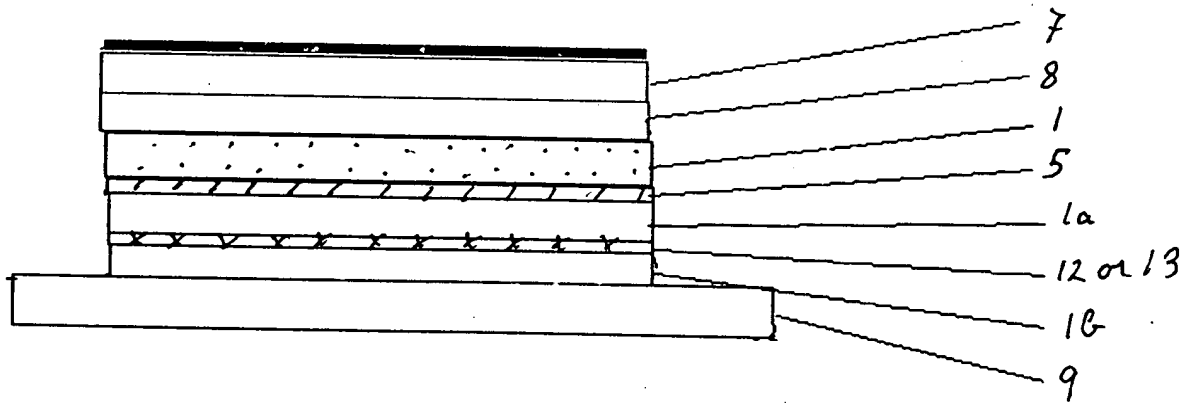


Fig. 18



Fig. 19



Fig. 15

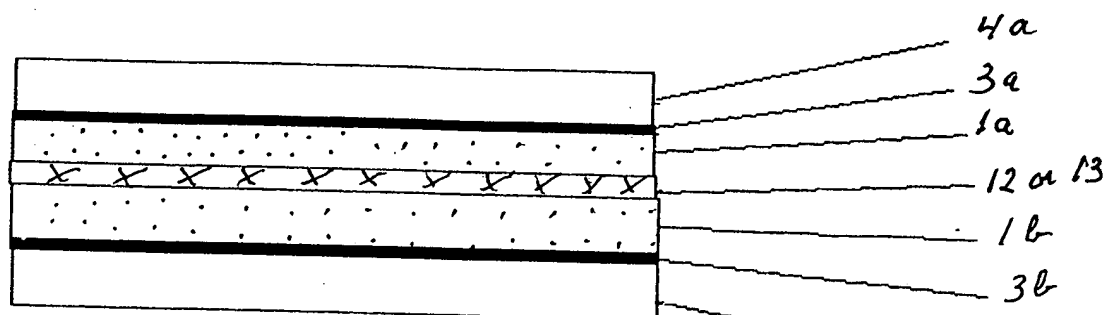


Fig. 16

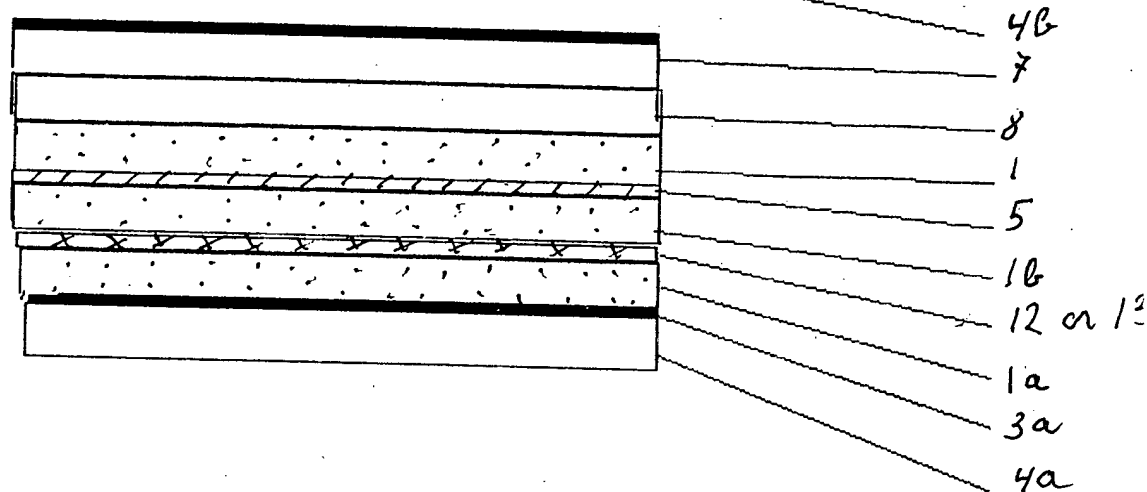


Fig. 17

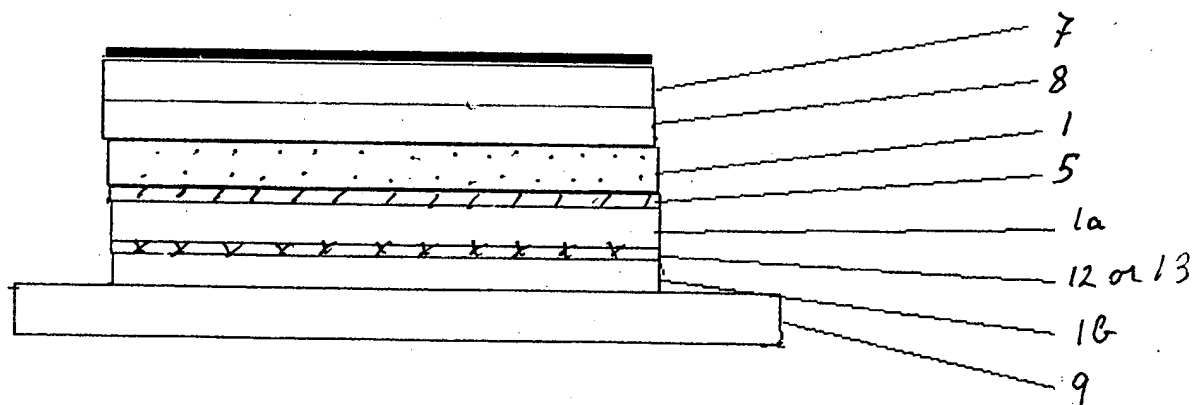


Fig. 18



Fig. 19

**Attachment 4**

**Copy of Patent Application & Covering Letter**  
68 Pages

PATENT LAW OFFICES OF RICK MARTIN, P.C.

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February 23, 2004

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ATTORNEY CLIENT PRIVILEGE

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52930 Atizapan  
Edo. Mex  
MEXICO

Re: Utility Patent Application  
Transfer Method for Surface Decoration  
Ref. No.: RM666

Dear Mr. Strom:

We raced to get a February 20, 2004 filing date in case you have a valid provisional from a year earlier. We agreed on a flat \$3800 legal fee to get you filed. The invoice has been sent.

You must budget about \$2000 to \$4000 more on this application to do:

- a) Formal drawings within 30-90 days
- b) Information Disclosure Statement (IDS)
- c) Substitute Specification without foreign language errors
- d) Claims on alternate embodiments (zinc)

Also, I did not charge to review the lengthy prior art. Some risk exists that your process is known, and that the surprise migration into the substrate is due to the chemical formula of S-246. If this is the case, then the application is not enabled, rendering it invalid. Another problem is your possible omission of "best mode" heat/time and pressure data in order to practice the invention in the best way you presently know how.

You can sacrifice this filing date and file a Continuation-in-Part if you have omitted "best mode" data or enabling data.

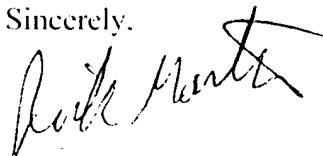
We'll try to find the missing provisional if your papers from Mrs. Upham do not yield the missing serial number.

Oscar af Strom  
Page 2 of 2  
February 23, 2004

You need to begin a monthly payment plan of at least \$300 per month, plus drawing costs up front (about \$600) for me to remain attorney of record. Deadlines to correct drawings, look for the provisional and others will soon be upon us.

I have tried to help you in this extraordinary set of circumstances. Please return our standard questionnaire as well.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick Martin", with a stylized flourish at the end.

Rick Martin

le  
enclosures

## TITLE

### TRANSFER METHOD FOR SURFACE DECORATION

5

#### CROSS REFERENCE APPLICATIONS

This application is a non-provisional application claiming the benefits of provisional application no. \_\_\_\_\_ filed February \_\_\_\_\_ 2003, from U.S. provisional patent application No. 15,252 filed January 30, 10 2003.

#### FIELD OF INVENTION

The present invention relates to transferring an image from a paper, such as a photograph, to a fabric such as a 15 shirt by means of a composite adhesive hot melt having a rubber base.

#### BACKGROUND OF THE INVENTION

This invention was conceived with a view of providing 20 an easy and reliable process for surface decoration by means of image transfer, as well as products therefore. Furthermore, the intention has been to provide a process and a product that may be used by small scale business entrepreneurs, particularly in developing countries, such as 25 craft producers, designers, T-shirt manufacturers, decal manufacturers and manufacturers of art reproductions. The

aim has also been to make versions of the process and products available to consumers.

The processes and products of this invention are developments of the methods specified in U.S. Patent Nos. 3,334,012 and 3,607,525, for the purpose of transferring images. These developments are mainly related to the use of a hot melt transfer adhesive, having a rubber base.

The main experiments and findings reported below have been carried out with a transfer adhesive of this kind, produced in the U.S. by Fasson Roll®, known as S-246. In Mexico, where this adhesive is available from Avery Dennison de Mexico, it is known as Adhesive #071. Another adhesive of that kind is manufactured in Mexico by ESAMEX® known by its specification code S67PS70086LAZI. Both versions are available in rolls.

The appearance of the rolls and the adhesive and the use of the same are almost identical with the one of acrylic based pressure sensitive adhesives. Various adhesives may be utilized in the same or similar manner for the purpose of obtaining decals. However, here the similarity ends. The claimed hot melt type adhesives claimed have a quality that other adhesives lack, namely the ability to migrate through layers, when heated. The result can be an easy-to-use method to custom decorate a washable T-shirt.

There are at least two distinct manners to manufacture composite sheets. The first one is to have them made by a company having machines for coating. In this manner the coating will be tailor made for its purpose. However, this  
5 is a costly undertaking, and requires considerable economic resources. Furthermore, as the cost per unit is dependent on the quantity being manufactured, it would take quite some time to lower the costs sufficiently to be able to sell the sheets at a reasonable price. On the other hand, the  
10 S-246 transfer adhesive and equivalents are being produced in great quantities and, for this reason, are available at a low price. Therefore, this method invention has been devoted to using composite sheets made by lamination, using a hot melt adhesive with a rubber base, thus available as a  
15 transfer adhesive. As stated above, this adhesive may be obtained in rolls, making it possible to apply the adhesive on rolls of plastic films in a laminating machine. However, sheet lamination of composite sheets, using a heat transfer machine are also taught herein.

20

#### SUMMARY OF THE INVENTION

The primary aspect of the present invention is to provide a method using a composite sheet to transfer an image from a paper to cloth substrate, wherein the image  
25 migrates into the cloth.

Other aspects of this invention will appear from the following description and appended claims, reference being made to the accompanying drawings forming a part of this specification wherein like reference characters designate  
5 corresponding parts in the several views.

#### BRIEF DESCRIPTION OF THE DRAWINGS

10 Before explaining the disclosed embodiment of the present invention in detail, it is to be understood that the invention is not limited in its application to the details of the particular arrangement shown, since the invention is capable of other embodiments. Also, the terminology used  
15 herein is for the purpose of description and not of limitation.

The below drawings are cross sections of successive stages of the transfer processes, showing the details of the elements being processed. Dimensions are not to scale, and  
20 the thickness of cross sections are greatly exaggerated. The adhesive of all adhesive layers shown in the figures is hot melt rubber based and adhesive, referred to as adhesive only.



FIG. 1 shows the cross section of a sheet of transfer adhesive.

FIG. 2 shows the cross section of a sheet of paper with an  
5 image on its surface.

FIG. 3 shows the cross section of a plastic film supported  
by a sheet of one-side-coated paper.

10 FIG. 4 shows the cross section of a plastic film supported  
by a silicone coated sheet.

FIG. 5 shows a cross section of a composite sheet of the  
preferred version, the plastic film of FIG. 3 supported  
15 by a one-side-coated paper, having been applied on the  
adhesive of FIG. 1.

FIG. 6 shows the cross section of the laminate of the  
composite sheet of FIG. 5, positioned with its adhesive  
20 layer in contact with the image of FIG. 2.

FIG. 7 shows the cross section of the laminate of FIG. 6, the image paper backing having been completely removed and the decal completed.

5 FIG. 8 shows the cross section of the decal of FIG. 7 being applied over a substrate.

FIG. 9 shows the cross section of the first face of the heat application of the decal of FIG. 8, the decal support sheet being removed.

10

FIG. 10 shows the cross section of the removal of the silicone coated ironing release paper of the decal of FIG. 9, at completion of the image transfer.

15 FIG. 11 shows the cross section of the decal of FIG. 7 with a layer of transfer adhesive applied over the decal (reverse) image.

FIG. 12 shows the cross section of the decal of FIG. 11  
20 applied on a substrate.

FIG. 13 shows the cross section of a zinc oxide coated electrostatic copying paper.

FIG. 14 shows the cross section of a layer of white ink applied on the surface of a triple coated printing paper.

FIG. 15 shows the cross section of a "White Background Sheet".

FIG. 16 shows a cross section of an adhesive decal with a white background.

FIG. 17 shows a cross section of an adhesive decal with a white background applied over a substrate.

FIG. 18 shows a plane view of an ink jet print of an art reproduction printed in an ink jet printer on a white ink jet printing paper.

FIG. 19 shows a plane view of an ink jet print of the art reproduction shown in FIG. <sup>18</sup>[19,] printed in an ink jet

printer on a zinc oxide coated electrostatic copying paper.

FIG. 20 shows a plane view of an ink jet print of the art reproduction, shown in FIG. 19, printed in an ink jet printer on a zinc oxide coated electrostatic copying paper.

#### DETAILED DESCRIPTION OF THE DRAWINGS

Figure 1 (prior art) shows the cross section of a transfer adhesive (sheet 100) in accordance with this invention. The rubber based hot melt adhesive (1) (preferably S246) is located between the liner (2) with the silicone layer (3a) and the liner (4) with the silicone layer (3b). The force required to peel off release layer (2) is less than the one required to peel off liner (4). The most common use for this transfer adhesive is to paste a picture onto a substrate. When you peel off 2 or 3, the silicone layer 3a, 3b goes with the liner (usually paper). Thus, a two sided adhesive can attach a photo to a cardboard substrate.

Fig. 2 shows the cross section of an image (5) located on the surface of a paper (6), which may be a bond paper or a coated paper. The image may be derived by any known printing, copying or coloring method, except for methods  
5 using water soluble inks or coloring media, such as those used in ink jet printers. For transfer of ink jet prints in accordance with this invention, a zinc oxide coated electrostatic copying paper has to be used, as shown in Drawings 18 & 19.

10 Fig. 3 shows the cross section of a plastic film (8) supported by a one-sided coated paper (7), which has been heat laminated to the film with its non-coated side in contact with the same. The film (8) may also be coated, or extruded over said non-coated side. Good results have been  
15 obtained by roller application of a 46 percent acrylic emulsion manufactured by Rohm & Haas as emulsion "B60A". Successful tests have been made with polyethylene film extruded over a 75 g one-side-coated paper, to be used for other purposes. For transfer of images located on coated  
20 papers, needing little time of submersion, the preferred laminates have been obtained with a 75 g/m<sup>2</sup> one-side-coated paper, produced by Kimberly Clark of Mexico S.A. de C.V., known as Lustrolito™, "una cara", laminated to various polyurethane films produced by Deerfield Urethane, Inc.  
25 This laminate is the preferred version of a composite sheet

for transfer of images located on coated papers. However, the support paper is only required for thin plastic films. Heavier films do not require a support sheet. On the other hand, for transfer of images located on tough paper

5 qualities, such as recycled papers, a one-side-coated paper with a water resistant coating will be required. One paper of this kind is produced in Colombia and marketed in Mexico by Papel S.A. under the trademark of Propalcot.

Fig. 4 shows the cross section of a plastic film (8) supported by a silicone coated liner (2), to which it has been heat laminated with the silicone coating (3a) in contact with the plastic film. This laminate is the preferred one for the two-step application of a composite sheet over an image. It may also be used for composite  
15 sheets.

Fig. 5 shows the cross section of the preferred plastic film laminate of Fig. 3 positioned with the plastic film (8) in contact with the adhesive (1), stripped of the liner (2) ahead of the lamination. I have found that an extruded  
20 polyethylene film may be attached to the adhesive, without heat, while the polyurethane and acrylic films require low heat pressing. The three mentioned films are examples of films which have been thoroughly pressing. The three mentioned films are examples of films which have been  
25 thoroughly tested for transfers of images in accordance with

this invention. However, thermoplastic as well as thermosetting films to which the adhesive adheres, may also be used, e.g. mylar and vinyl films, both of which have been successfully tested for adhesion.

5        Fig. 6 shows the cross section of the laminate of Fig. 5 positioned with the adhesive (1), stripped of its second liner (4), in contact with the image (5), which is to be transferred by the present invention method. No heat and little pressure is needed. In respect of the latter, it is  
10 recommended that for the consumer version of a transfer kit, the laminate be rubbed over the support paper (7) with an applicator, such as a tongue depressor, prior to being submerged in water.

      Fig. 7 shows the cross section of the completed decal,  
15 following removal of the image paper backing of the laminate shown in Fig. 6, preferably by soaking in water.

      Fig. 8 shows the cross section of the decal of Fig. 7 applied over a substrate, such as a shirt to be decorated.

      Fig. 9 shows the cross section of the decal of Fig. 7,  
20 applied over a substrate, having been pressed for 10 seconds, covered with a wet press cloth at polyester temperature (nominally about 120° C). The steam created by the pressing has caused the bond between the support paper (7) and the plastic film (8) to loosen and the heat has  
25 caused the adhesive (1a) to migrate through the image (5),

slightly into the surfaces of the substrate (9). By twisting the decal slightly, it will separate completely, and may now be peeled off, as indicated.

Fig. 10 shows the cross section of the completion of the transfer, commenced in Fig. 9. After removal of the composite sheet support paper, as shown in Fig. 9, the decal has been covered by a silicone coated release paper (10) and pressed for 40 seconds at the same polyester or slightly higher temperature. This has caused the adhesive (1b) to migrate further into the substrate, giving the transfer a firm hold. In such a manner, transfers to fabric become completely machine washable. When cool, the silicone coated ironing paper (10) is peeled off. The transfer has been completed, and the surface decorated accordingly.

Fig. 11 shows a cross section of an adhesive decal, obtained by covering the (reverse) image (5) of the decal shown in Fig. 7, with a layer of transfer adhesive (1), its second liner (4) still covering the adhesive surface.

Fig. 12 shows a cross section of the adhesive decal shown in Fig. 11, stripped of its liner and applied over a substrate (9). In accordance with this invention, the hot melt (S-246) adhesive (1) is to be used. As a result, the resultant transfer will be fully machine washable without having been heat pressed.



Fig. 13 shows the cross section of a zinc oxide coated electrostatic copying paper. The zinc oxide layer (12) is attached to the support paper (11), from which it may be released after a few minutes of soaking. The zinc oxide layer lends itself to printing in an ink jet printer, in particular for printing of patterns as well as for subsequent painting with color pencils, crayons or markers. Black inks should be used when the pattern is supposed to be visible. However, when it is to be invisible, it may be printed in other colors, as required. Decals derived from images printed on the zinc oxide layer (12) will have this layer as a background layer and may, for this reason, be applied on dark substrates.

Fig. 14 shows the cross section of a triple coated paper (15). A white color layer (13) has been printed on top of the triple coating layer (14). Mechanically, this laminate functions in the same manner as the one of Fig. 13, i.e. the support paper 15 will release after a few minutes of submersion. Decals derived from images printed on the white color layer (13) will have this layer as a background and may, for this reason, be applied on dark substrates.

Fig. 15 shows the cross section of a White Background Sheet (150). This sheet has been obtained by provision of layers of transfer adhesive (1a, 1b) on both sides of the zinc oxide coating (12), shown in Fig. 13, or the white

printing ink layer (13), shown in Fig. 14. This laminate has been obtained by first applying the transfer adhesive (1a) over the zinc oxide layer (12) or the white printing ink layer (13). The support paper (11) or (15),  
5 respectively, was, thereafter removed, exposing the respective layers' reverse side. This may be achieved by a few minutes of wetting of the support paper by steam or by a wet cloth or by submersion. After a period of drying, the transfer adhesive (1b) was applied on the white layer  
10 reverse side, and the laminate dried. This laminate may be used for the purpose of providing decals with a white background, as shown in Fig. 16.

Fig. 16 shows the cross section of an adhesive decal with a white background. The White Background Paper shown  
15 in Fig. 15 was stripped of the liner (4b) over the transfer adhesive layer (1b) and applied with the adhesive layer (1b) in contact with the decal (reverse) image (5). While the two liners over the layers of transfer adhesive originally had the same properties, the moistening of the laminate in  
20 order to remove the support paper has increased the force required to remove the liner (4a), which facilitates the removal of the liner (4b).

Fig. 17 shows the cross section of the adhesive decal with a white background applied over a substrate (9). The  
25 decal liner (4a) was the first removed, and the decal

applied with the adhesive (1a) in contact with the substrate (9). In accordance with this invention, preferably the hot melt (S-246) adhesive is to be used. This will make transfers machine washable without heat pressing.

5        Fig. 18 shows a plane view of a painted image, printed in an ink jet printer with water soluble inks, on a white ink jet paper.

      Fig. 19 shows a plane view of the same painted image, printed in an ink jet printer with water soluble inks, on  
10    the zinc oxide coating of an electrostatic copying paper. As will be seen, the colors of this print are pale and weaker than those of Fig. 18. A transfer to canvas will have about the same colors. This may be utilized for painting of art reproductions, and for teaching. The image  
15    on the zinc oxide layer already has the color pattern, though pale and weak. In order to obtain a good reproduction, the colors have to be reinforced. The master painter knows how to do that, and the result of his efforts will become a true reproduction. The student will learn to  
20    paint, by reinforcing the colors in accordance with the instructions provided by the teacher.

### Examples

      Example 1. A color laser copy on a triple coated paper  
25    was to be transferred to canvas. The picture was cut out

with a slight margin and placed on the ironing paper, face up. A similar piece of a Composite Sheet was also cut out. The liner was removed and the sheet positioned with the adhesive in contact with the image. The Transfer Paper  
5 printed support paper was then rubbed with a squeegee, after which the laminate was submerged. After a few minutes of soaking, the image paper backing was peeled off, and the reverse image trimmed. The decal had now been completed, ready for immediate application, or for application later  
10 on. The decal was positioned on the sheet of canvas, covered with a wet press cloth, and pressed for 10 seconds at "polyester" temperature. The press cloth was then removed, the resultant transfer twisted lightly and the decal support paper peeled off. The decal was, thereafter,  
15 covered with a silicone coated ironing paper and pressed for 40 seconds at the same temperature. When cool, the ironing paper was removed. The transfer had now been completed.

Example 2. A magazine picture was to be transferred to a T-shirt. The picture was cut out and placed on the  
20 Ironing Paper, face up. A similar piece of a Composite Sheet was also cut out. The liner was removed and the Composite Sheet positioned with the adhesive in contact with the image. In order to secure good contact, the laminate was then rubbed with a squeegee. It was thereafter  
25 submerged in water. After 1 hour of soaking, the laminate

was removed and placed on the working surface with the image paper backing up. The saturated paper backing was then peeled off and the reverse image completely cleaned. The laminate reverse image was, thereafter, trimmed. The decal  
5 had now been completed, ready for immediate application or application later on. The application was completed in exactly the same manner described above.

Example 3. A visitor of the Internet home site of an art supply manufacturer downloaded the pattern of an image  
10 and printed the same in an ink jet printer on the zinc oxide coated paper. A similar piece of a Composite Sheet was also cut out. The printed pattern was, thereafter, colored, using permanent markers for all but one of the colors, which was colored with crayons. The painting was placed on the  
15 Ironing Paper and the piece of the Composite Sheet applied over the same. The laminate was then submerged for 10 minutes, after which the zinc oxide layer support paper was peeled off and the image trimmed. The decal had now been completed, ready for immediate application or application  
20 later on. The application was made in the same manner as explained in Example 1.

Example 4. A decal manufacturer printed images to be applied on windows, on sheets of 75 g one-side coated paper. Composite Sheets of the corresponding size were cut out and  
25 applied over the images and the laminates dye cut, submerged

and recovered when the image paper backings had loosened and fallen off. The iron-on decals obtained were cleaned and dried, whereafter they were placed on sheets of bond paper, face up, and covered with ready cut pieces of S-246 transfer  
5 adhesive, which was pressed down over the exposed reverse images. The laminates were lifted up, excess adhesive remaining on the sheets of bond paper, and overlapping liners trimmed off. The resultant adhesive decals were stored in polyethylene bags, ready for application.

10        Example 5. A decal manufacturer printed images for adhesive application on dark substrates, on sheets of triple coated paper. Composite Sheets were cut out and applied over the images. The laminates were dye cut, submerged and recovered when the images paper backings had loosened and  
15 fallen off. The iron-on decals thus obtained were placed on a Teflon coated surface, face up, and covered with ready cut sheets of White Background Paper, pressed down over the exposed reverse images. The laminates were trimmed, and the completed decals placed in polyethylene bags, ready for  
20 application.

Although the present invention has been described with reference to preferred embodiments, numerous modifications and variations can be made and still the result will come within the scope of the invention. No limitation with  
25 respect to the specific embodiments disclosed herein is

intended or should be inferred. Each apparatus embodiment described herein has numerous equivalents.

#### DETAILED DESCRIPTION OF THE INVENTION

5 As noted above the best mode of the present invention uses the S-246 adhesive by Fasson®. It is a general purpose rubber based adhesive featuring high initial tack and ultimate adhesion. The adhesive data sheet follows below wherein one skilled in the art can substitute other generic  
10 composite sheets to practice the present invention.

Fasson® S-246 is a general purpose rubber based adhesive featuring high initial tack and ultimate adhesion.

Type: Hot Melt Rubber

15

Substrate	Loop Tack	Peel Adhesion
Stainless Steel	6.2 lbs	3.0 lbs-tear
Treated HDPE	4.3 lbs	2.2 lbs-tear
Polypropylene	4.5 lbs	3.0 lbs-tear
Recycled Corrugated	2.0 lbs	0.8-1.4 lbs – Pulled Fiber
Glass	6.0 lbs	2.6 lbs-tear

Minimum Application Temperature: +40°F 4°C

Service Temperature Range: +65°F to +160°F

**Face:**

60# C1S Paper at room temperature  
on standard lab panels

**FDA Compliance:**

5

10

15

FDA Compliance: Title 21, Section 175.105 of the Code of Federal Regulations (21 CFR 175.105). Compliance to this regulation permits the use of this adhesive in applications for which the adhesive either (1) is separated from the food by a functional barrier, which will prevent the migration of any of the adhesive components to the food, or (2) has incidental contact with food limited to the trace amount at the seams or the edges of the label.

**Product Data**

S-246 ADHESIVE

20

S-246 is a general purpose rubber based adhesive featuring high initial tack and ultimate bond strength. Excellent on packaging films and plastic substrates.

**General Adhesive Information**

**Type:** Hot Melt Rubber

**Adhesive Caliper:** 0.0006 inches  $\pm$  10%

25

**Minimum Application Temperature:** +40°F

**Service Temperature Range:** -65°F to +160°F

30

**FDA Compliance:** S-246 is specified where compliance to FDA 175.105 is required. This section covers applications where incidental contact between adhesive and food may be possible – also referred to as “seam” contact. Consideration should also be given to the proper selection of facestock when dealing with FDA requirements.

**Shelf Life:** One year when stored at +72°F/50% R.H.



### Application & Uses

5 S-246, with its high initial tack and excellent long-term bond strength, has a wide variety of uses. This adhesive will be used for shipping labels applied to corrugated or packaging films, and for product identification labels applied to a wide variety of substrates including glass, metal, plastic and others.

### Typical Adhesion Values (lbs/inch)

<u>SUBSTRATE</u>	<u>24 HR PEEL</u>	<u>LOOP TACK</u>
Facestock:	50# DSX	50# DSX
10 Stainless Steel	3.0-Tear	5.5-6.8
Treated HDPE	2.2-Tear	3.7-4.9
Treated HDPE	1.9-2.5	3.8-4.5
Polypropylene	3.0-Tear	4.1-5.0
Recycled Corrug.	0.8*-1.4*	1.6-2.4*
15 Glass	2.6-Tear	4.9-7.1

\*Pulled Fiber During Removal

20 As with all pressure-sensitive adhesives, S-246 should be tested thoroughly under end-use conditions to make sure it meets the requirements of the specific application.

25 The S-246 adhesive has a second liner that requires considerable force to peel off. For this reason, it becomes difficult to have some plastic films attached to a silicone coated release sheet, as the force required to release the same must be greater than the force required to release the S-246 adhesive second liner. Such sheets are not readily  
30 available in the market and have to be obtained by special order, which is a costly proposition. Therefore, various

other known release methods were tested, such as having the plastic film adhering to the support sheet by means of a removable adhesive. This works fairly well, provided the decal is not ironed-on at higher temperature than the one  
5 specified for nylon. Good results were obtained using Fasson UR1® ultra removable adhesive. However, if the user applies the decal at too high a temperature, the removable adhesive will turn into a permanent adhesive, making it impossible to remove the support sheet at the end of the  
10 transfer process.

For the above reason, a wet release of the support sheet, using a water soluble adhesive, was tried. It works satisfactorily, but the sheets become easily curved and wrinkled, due to humidity. The solution to use packages  
15 such as those being used for water release decals was found impractical. Finally what was to become the preferred mode, the non-coated side of a one-side coated paper, in accordance with U.S. Patent No. 5,032,449 - DECALS AND  
PROCESSES FOR TRANSFER OF IMAGES TO SUBSTRATES, was tested.  
20 As will be seen below, the layers of coating and the weight

of the paper will affect the time and quality of the release.

Various qualities and gram weights of the paper having the original image were tested, such as the Kimberly Clark  
5 de Mexico® Lustrolito 1-c 75 g/sqm and 100 g/sqm. When heat laminated to a polyurethane film and submerged, these paper qualities release rapidly. The 75 g version will separate by itself and fall off the laminate after about 15 minutes of submersion. On the other hand, a 100g one-side coated  
10 paper of Colombian origin with the trademark of Propalcot, also laminated to a polyurethane film, will adhere to the submerged laminate for several hours.

Notwithstanding, if pressed for 10 seconds with a wet cloth, it may be peeled off from the transferred image in  
15 one piece. In addition, the release qualities of these papers were tried on laminates with acrylic and polyethylene films. These laminates were obtained, as follows:

- a) Acrylic film: by applying acrylic emulsion with brush or roller over the paper non-coated side.
- 20 b) Polyethylene film: by lamination of the film to the paper non-coated side by extrusion.

These laminations work well. For a consumer version of the composite sheet, intended for transfer of magazine pictures, the Propalcot® 100 g/sqm one-side coated paper, laminated to a 1 mil polyurethane film of a kind available from Deerfield Urethane®, South Deerfield, MA, has proved to function very well. Such a composite sheet is made as follows:

- a) The paper is positioned with its non-coated side in contact with the polyurethane film, heat and pressure is applied over the paper-coated side, by pressing for 15 sec. at about 140°C.
- b) A layer of the S-246 transfer adhesive is applied over the polyurethane film and pressed for 15 seconds at about 140°C.
- c) The sheets are trimmed to desired size.

A composite sheet of this kind is used as follows:

- a) Cut out the picture, leaving a slight margin all around. Also, cut out a similar piece of the composite sheet.

b) Peel off the liner of the piece of the composite sheet, and position the piece with the adhesive in contact with the image.

5 c) Submerge the laminate until the picture paper backing becomes saturated. A couple of minutes for coated papers and several hours for pictures on recycled paper.

10 d) Remove the picture paper backing. May be peeled off in large pieces from coated papers, and worked off from difficult paper qualities, such as recycled paper.

e) Trim the "Iron-on" decal, which is now completed.

The decal may be applied immediately, or later on. In order to protect clear areas from getting tacky due to migration of the adhesive, the image surface should be  
15 rubbed with talcum powder and the decals placed in polyethylene bags.

Application of decals on substrates that may be ironed, is made as follows:

20 a) Position the decal with the image in contact with the desired surface. Cover with a wet press cloth

and press for 10 seconds with the iron preheated to "polyester" temperature. If it is a stored decal, it should first be submerged for a couple of minutes.

- 5 b) Twist the decal and peel off the support paper.

(The relatively low heat and short time will have caused the adhesive layer to expand and migrate slightly through the image layer of printing inks or copy toners, through the talcum powder layer, if  
10 any, into the substrate, giving the same a slight hold to the substrate.

- c) Cover the image with a silicone coated ironing paper and press for 30-40 seconds. Let cool. When cool, remove the ironing paper. The transfer has been  
15 completed.

The second pressing will cause the adhesive to migrate further into the substrate, giving the transfer a firm hold that will withstand multiple machine washings. It is, of  
20 course, possible to press the decal for 40 seconds and remove the paper thereafter by pressing with a wet press

cloth. However, this is not recommended, as prolonged pressing over the support paper may cause some of the coating pigments to transfer, causing whitish spots on the transfer surface.

5       A dry release decal may be produced in the same manner as this version, using a silicone coated paper for support instead of the one-side-coated paper. As stated above, the force required to peel off the silicone coated paper must be greater than the one needed to peel off the composite sheet  
10 adhesive liner. This kind needs only to be pressed for 30 seconds at a slightly higher temperature. After a couple of seconds of cooling, the silicone coated support paper may be peeled off. The transfer is then completed. This version is more costly to produce, as the required release paper is  
15 not available in the market and has to be produced for this purpose. Furthermore, this release paper must be waterproof in order to make the submersion of the laminate possible.

      While a silicone or other dry release system is difficult to include in a composite sheet, it is well suited  
20 for the divided process. The decal is prepared in exactly the same manner as described in U.S. Patent No. 3,607,525,

incorporated herein by reference. The application is the same as the one described above.

Application with adhesive does not involve anything new. The decal may simply be pasted to the substrate using  
5 adhesive, paint or varnish. A decal of this kind should have the 75 or 100 g Lustrolito® support paper, which is easy to remove by application of a piece of wet cloth over its surface. It should only be used for "easy to transfer" pictures, such as most pictures located on clay coated  
10 paper. While it is always better to wait until the adhesive has dried before removing the support sheet, I have found that in most cases, as soon as the adhesive has taken hold, the support paper may be removed. In addition to using this mode for applications on surfaces which are difficult to  
15 iron, water soluble school adhesives may also be used on surfaces suitable for heat application, e.g. by children too young to use an iron. An adult may thereafter press the transfer, which will then appear heavy and non-flexible. However, during the first washing the adhesive will dissolve  
20 and disappear, and the transfer will then look like any other transfer, though perhaps with a couple of wrinkles,



which disappear with pressing. The fact that the transfer does not loosen is another proof of the fact that the adhesive even migrates through a layer of another adhesive.

A full-fledged adhesive sticker may be obtained by  
5 application of transfer adhesive over the decal image. The decal is produced in the following manner:

- a) Select a composite sheet with a 75 g or 100g Lustrolito® one-side-coated paper as a support paper.
- 10 b) Prepare a decal in the manner described above. If the paper is difficult to remove and has to be submerged for a longer period than 10-15 minutes, submerge it with the support paper resting on a piece of bond paper. This will prevent the support  
15 paper from falling from the laminate, even if in a stage of release.
- c) Place the decal on a release paper with the image in contact with the same. Cover with an ironing paper and press for 15-20 seconds with the iron preheated  
20 to polyester temperature. The pressing will cause the support paper to re-adhere to the plastic film.

d) Place the decal on a sheet of bond paper, image up.

Apply a piece of transfer adhesive, slightly larger than the image, over the same. In order for the adhesive to stick well, 10-15 seconds of pressing over its liner is recommended.

e) Trim the liner. The adhesive decal is now completed.

This decal is simple to apply. The liner is removed and the decal positioned with the adhesive image in contact with the substrate. The support paper is next moistened and peeled off. The transfer is completed. In the event that S-246 adhesive is being used, the transfer will become machine washable without pressing. This is unique. To my knowledge, there is presently no process available in the market with which an image may be transferred and the transfer will become machine washable, without having been heat pressed.

The decal may also be converted into a removable sticker with modest adhesive strength, adequate for temporary applications. This is done in the following

manner: The decal is positioned on a silicone coated release paper with the (reverse) image in contact with the release surface. The decal is, thereafter, pressed for 30-60 seconds, with the iron at "nylon" temperature, keeping  
5 the iron and sandwich completely still. Any movement would damage the image. After a period of cooling, the sticker is ready for application, the adhesive having expanded and migrated through the image layer, which has become sticky. When the sticker is to be applied, the liner, i.e. the  
10 silicone coated paper protecting the adhesive image, is peeled off and the sticker positioned on the desired substrate, to which it will adhere by its adhesive layer. The decal support paper is, thereafter, removed.

The above processes may be used for printed, copied,  
15 hand drawn and hand colored images, except prints in ink jet printers with water soluble ink. While I have not yet designed a special paper for this purpose, I have discovered that ink jet prints which have been printed on zinc oxide coated electrostatic copying paper may be transferred,  
20 though only prints in black and dark colors transfer well. Light colors, reds and yellows in particular, will appear

pale and weak on the paper as well as on the transfers. For this reason, the main use of such prints is for transfer of patterns and outlines, to be colored. Such coloring may be made before the transfer, using color pencils, crayons and  
5 markers, or after completion of the transfer, using permanent markers, oils and acrylics. The transfers are fully machine washable. Furthermore, as will be dealt with in connection with transfers to dark backgrounds, the zinc oxide coating may also be utilized for the purpose of  
10 providing decal images with a white background.

The composite sheet is, without doubt, the most important part of this invention. With it, it is possible to transfer practically any image located on paper. Thus, a person may be able to decorate his or her personal  
15 belongings with images found in magazines, newspapers and postcards as well as pictures that he or she has painted themselves, using the composite sheet and the transfer process in accordance with this invention. Sometimes such transfers may become cumbersome and time consuming. This is  
20 the case when the image paper backing consists of recycled paper and, for this reason, is difficult to remove. For an

amateur, this does not matter very much. Just let the laminate soak until the paper is completely saturated. However, for commercial applications, the process must be as simple as possible, as economic as possible and as fast as possible.

The composite sheet and the process for its use satisfy well the first two of these requirements. For the third requirement, speed of decoration, the speed and method of obtaining the image on the paper, as well as the speed of the transfer process proper, which is directly related to the quality of the paper, are the dominating factors. Offset printing or digital printing is the fastest method, when quantity is involved. However, for artisans, use of a computer printer is also adequate, as is photocopying. Some artisans may wish to print the patterns, and paint them by hand, either before or after the transfer to the item to be decorated. As to the speed of the transfer, the paper quality is the most important factor and, for this reason, an important part of this invention.

For transfers to transparent substrates, where the transferred image is to appear equally transparent, the

image to be transferred should be printed or copied on the non-coated side of a one-side-coated paper. Practically any kind of such a paper may be used. The "Lustrolito 1 c", 75g, 90g & 100g, papers, produced by Kimberly Clark de Mexico, have been successfully tested, as has a Colombian paper with the trademark of Propalcot. For transfers to light and semi-dark substrates, the new kind of coated papers with triple layers of coating, function very well. The semi-matte qualities of such a paper, in Mexico known as "Super Polart Triple recubrimiento", produced by the Belgian company Burgo Ardenne has proved to provide excellent and rapid transfer of printed, copied and hand painted images. The white pigment of the coating provides the decal image with a semi-white layer, which makes possible applications to semi-dark surfaces.

The laminates of composite sheets and these papers, whether one-side coated or with triple coating, do only have to be submerged for a couple of minutes before the paper backing may be peeled off from the reverse image. After 20 minutes of submersion, the image paper backing will separate by itself and fall off, automatically turning the laminate

into a decal. For commercial utilization of this invention, the image may be printed at high speed on the Polart Paper or on the one-side-coated paper, and the composite sheet successively applied with its adhesive side in contact with  
5 the printed images. The resultant laminate is, thereafter, dye cut and submerged. For a simple automatic process, the composite sheet as well as the paper should be in roll form. With such a process, several hundreds, even thousands of laminates may be produced per hour, depending on the size of  
10 the laminates. Thus, if 100 or 1000 dye cut laminates are submerged, after 20 minutes and light rinsing, the 100 or 1000 laminates have been converted into decals, ready for instant application or application at a later period. In this manner, decals may be produced as a speed that is  
15 competitive with decals produced in laser photocopies. Instead of submersion in water, the image paper backing may be treated with steam, after which it may be peeled off. For this purpose, the laminate is placed on the working bench, image paper backing up, and covered with a wet press  
20 cloth. By pressing over the wet cloth for 10 seconds, with the iron at polyester temperature, the paper backing

releases from the image and may be peeled off. This works well, and a machine may be developed for this purpose. Until then, the optimum method for mass production of decals, in accordance with this invention, is to submerge  
5 the laminates, as mentioned above.

Of the decals mentioned above, only those derived from a picture located on a zinc oxide coated electrostatic copying paper may be applied on dark substrates. This becomes possible because the zinc oxide coating gives the  
10 decal a white background, which is necessary in order for the transferred picture to become visible on a dark substrate. In addition to printing on this paper in an ink jet printer, with waterproof inks, offset printing may be used. Instead of utilizing a white zinc oxide coated paper,  
15 a one-side-coated paper, or a Polart paper may be given a white color layer, and images printed on the white color layer may also be applied on dark substrates, in the same manner as images printed on the zinc oxide coated paper. The resultant decals, whether having a white layer of zinc  
20 oxide or layers of white offset ink, need an additional



white layer for application on really dark substrates, such as black T-shirts, as will be explained below.

Decals with images obtained on a zinc oxide coating or printed white layer, ought to have a heavier layer of adhesive than other decals. For application of such decals, the adhesive has to migrate through a color layer, i.e. a longer distance than for any of the other above-mentioned transfers. I have found that the standard layer of adhesive of the two transfer adhesives tested, having a thickness of about 1 mil, is satisfactory for transfers of prints and copies on papers other than zinc oxide coated paper or offset coated papers, which require two layers. Two layers are also recommended for transfer of newspaper pictures.

A transfer of an ink jet print on zinc oxide coated paper is made in almost the same manner as prints on other papers. A composite sheet with a double layer of adhesive is applied over the print. The sandwich is submerged for 5-10 minutes. The laminate is then placed on the working surface with the support paper down and zinc oxide coated backing paper up. If the ink is water soluble, the surface of the backing paper is then rubbed in order to prevent, as

far as possible, that colors bleed and be absorbed by it. This paper is, thereafter, penetrated with a fingernail and peeled off. Finally, the decal is trimmed. It is then completed. The decal is applied in the same manner as other  
5    decals.

Water soluble ink jet color prints on the zinc oxide paper and transfers of the same appear pale and weak, especially reds and yellows. This may be utilized by painters for the purpose of making art reproductions. The  
10   various colors are still sufficiently visible to make it possible for somebody skilled in the art of painting and mixing oils or acrylics to be able to reinforce them, guided by a color print of the same picture on ink jet paper. The result may become a true reproduction of the original  
15   painting. This method may be also be used for teaching purposes and by amateur painters, in a manner similar to painting by numbers. While the paint by number system utilizes numbered patterns printed on canvas or other substrates, this system utilizes colored patterns.

20       Application of decals on dark substrates is an important aspect of surface decoration and thus of this

invention. As said above, one method is to print the image on the white layer of zinc oxide layer or on a paper with a printed white layer. For transfer of prints and copies which are not located on a white color layer, one known method, utilized in the above-mentioned Lift-a-Picture kits, is to apply the decals by use of a white transfer adhesive. Unfortunately, white transfer adhesive is not generally available in the market and has to be specially ordered from one of the adhesive manufacturers, a costly proposition. A method specifically developed for this invention is to provide a "White Background Paper". The first step of the manufacture of such a paper is to apply transfer adhesive over the zinc coating of an electrostatic copying paper, or over the white offset printing of a one-side coated paper or a triple coated paper, such as the Polart paper. The next step is to submerge the laminate and, when saturated, remove the paper backing of respective white layers. The decal may then be applied on the white surface by heat pressing. The resultant adhesive decal is then applied in the manner described above, i.e. by removing the second liner of the transfer adhesive, pressing down the decal in the desired

position and, finally, wetting and removing the decal support paper.

Use of a White Background Paper of the above kind works, but the heat application of the decal on its surface tends to darken the white color of a zinc oxide layer as well as of the white offset layers. For this reason, a white screen printed layer is required. As such a layer becomes heavy, a better solution is to apply a second layer of transfer adhesive over the white layer. Such a White Color Paper with two layers of adhesive, one below and one above the white color layer, is considered to be the best mode of decoration of dark substrates. The paper is used as follows: The liner of the layer of transfer adhesive last applied is removed and the White Background Paper applied over the decal image. After trimming of the edges, the liner of the second transfer adhesive is removed and the decal pressed down in the desired position. Finally, the decal support paper is moistened and removed. If the S-246 adhesive has been used, the transfer, if applied on fabric, will become machine washable. There is no need for heat pressing, however, any wrinkles that may develop may be

leveled out by heat pressing at rayon or silk temperature. Higher temperatures may cause some of the darker colors to migrate and give the image darker tone. There are many adhesive decals or "stickers" available in the market.

5 However, none of them can be applied on light as well as dark fabrics without heat pressing and still become machine washable. For this reason, decals for surface decoration in accordance with this invention are unique.

#### 10 DISCUSSION OF DEVELOPMENTAL PROCESS

Below follows a summary of the above-noted invention.

1. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer  
15 adhesive, the process comprising the steps of:

- a) combining a releasable support sheet with a plastic sheet;
- b) stripping said transfer adhesive of its primary liner and placing the combined sheet obtained in  
20 step a) with its plastic surface in contact with the tacky adhesive surface.

- c) stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.
- 5 d) obtaining an "iron on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
- 10 e) applying the decal obtained in step d) by positioning the same with the image or indicia in contact with said surface.
- f) applying heat over the releasable support sheet, thereby causing said adhesive to expand and
- 15 migrate through the layer forming the image or indicia, into said substrate.
- g) stripping the decal of said releasable support sheet.
- 20 2. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of

composite sheets derived from rubber based hot melt transfer adhesive, which includes:

- 5 a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the indicia or image bearing layer of said paper;
- b) combining a releasable support sheet with a plastic sheet;
- 10 c) stripping said adhesive of its secondary liner and placing the combined sheet obtained in step b) with its plastic surface in contact with the tacky surface of said paper.
- 15 d) obtaining an "iron on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
- 20 e) applying the decal obtained in step d) by positioning the same with the image or indicia in contact with said surface.

f) applying heat over the releasable support sheet, thereby causing said adhesive to expand and migrate through the layer forming the image or indicia, into said substrate.

5 g) stripping the decal of said releasable support sheet.

3. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of  
10 composite sheets derived from rubber based hot melt transfer adhesive, which includes:

a) combining a releasable support sheet with a plastic sheet;

15 b) stripping said transfer adhesive of its primary liner and placing the combined sheet obtained in step a) with its plastic surface in contact with the tacky adhesive surface.

20 c) stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.



d) obtaining an "iron on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.

e) converting the iron-on decal obtained in step d) into an "adhesive decal" by stripping a second piece of said transfer adhesive of its primary liner and positioning the decal obtained in step d) with its indicia or image surface in contact with said transfer adhesive exposed tacky surface.

f) stripping the adhesive decal obtained in step e) of its liner and positioning the same with the exposed adhesive in contact with said surface.

g) stripping the decal of said releasable support sheet.

4. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:

- a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the indicia or image bearing layer of said paper;
- 5 b) combining a releasable support sheet with a plastic sheet;
- c) stripping said adhesive of its secondary liner and placing the combined sheet obtained in step b) with its plastic surface in contact with the tacky surface of said paper.
- 10 d) obtaining an "iron-on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
- 15 e) converting the iron-on decal obtained in step d) into an "adhesive decal" by stripping a second piece of said transfer adhesive of its primary liner and positioning the decal obtained in step
- 20 d) with its indicia or image in contact with said transfer adhesive exposed tacky surface.

f) stripping the adhesive decal obtained in step e) of its liner and positioning the same with the exposed adhesive in contact with said surface.

g) stripping the decal of said releasable support sheet.

5           5.    A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:

10           a)    combining a releasable support sheet with a plastic sheet;

            b)    stripping said transfer adhesive of its primary liner and placing the combined sheet obtained in step a) with its plastic surface in contact with the tacky adhesive surface.

15           c)    stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.

20           d)    obtaining an iron-on decal by washing said indicia or image-including composite sheet in water to

soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.

- e) applying an adhesive layer over said indicia or image and/or over said surface.
- f) positioning said decal with the indicia or image in contact with said surface.
- g) stripping the decal of said releasable support sheet.

6. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:

- a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the indicia or image bearing layer of said paper.
- b) combining a releasable support sheet with a plastic sheet.
- c) stripping said adhesive of its secondary liner and placing the combined sheet obtained in step b)

with its plastic surface in contact with the tacky surface of said paper.

d) obtaining an "iron-on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.

e) applying an adhesive layer over said indicia or image and/or over said surface.

f) positioning said decal with the indicia or image in contact with said surface.

g) stripping the decal of said releasable support sheet.

7. A process for decoration of dark surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes

a) applying a white color layer by printing or coating or other known means over the surface of a triple coated paper.

- b) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with said triple coated paper's white surface, obtained in step a).
- 5 c) washing said white layer-including composite in water to soften the paper and removing the same, thereby exposing the white layer retained in the composite sheet.
- 10 d) obtaining a "white color transfer sheet" by stripping a second piece of said transfer adhesive of its primary liner and positioning the composite sheet obtained in step c) with its white surface in contact with said second piece of transfer adhesive exposed tacky surface.
- 15 e) obtaining a "white background adhesive decal" by stripping said "white color transfer sheet" of the secondary liner of said second piece of transfer adhesive and positioning any of the iron-on decals obtained in steps d) of numbers 1-6 with its
- 20 indicia or image in contact with said "white color transfer sheet" exposed tacky surface.

- f) stripping the white background adhesive decal of its liner and positioning it with the exposed tacky surface in contact with said dark surface.
- g) stripping the decal of said releasable support sheet.

5

8. A process for decoration of dark surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes

10

- a) stripping said transfer adhesive of its primary liner and positioning it with its tacky surface in contact with the white zinc oxide surface of an electrostatic copying paper.

15

- b) washing the white layer-including composite sheet obtained in step a) in water to soften the paper and removing the same, thereby exposing the white layer retained in the composite sheet.

20

- c) obtaining a "white color transfer sheet" by stripping a second piece of said transfer adhesive of its primary liner and positioning the composite sheet obtained in step b) with its white surface

in contact with said second piece of transfer adhesive exposed tacky surface.

d) obtaining a "white background adhesive decal" by stripping said "white color transfer sheet" of the secondary liner of said second piece of transfer adhesive and positioning any of the iron-on decals obtained in steps d) of numbers 1-6 with its indicia or image in contact with said "white color transfer sheet" exposed tacky surface.

e) stripping the white background adhesive decal of its liner and positioning it with the exposed tacky surface in contact with said dark surface.

f) stripping the decal of said releasable support sheet.

9) A process for decoration of surfaces with hand painted art reproductions through transfer of copies of paintings from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes

a) obtaining a computer image of said copy of a painting.



b) obtaining an ink jet print of said computer image on the zinc oxide surface of an electrostatic copying paper.

5 c) obtaining a print of said copy of a painting on an ink jet paper, or through other means

d) obtaining a weak image, though true in color, by transferring said ink jet print to said surface, utilizing any of the processes defined in numbers 1-8.

10 e) with the true copy as a guide, reinforcing the colors of said weak image through painting with oils, acrylics or art markers.

10. Processes in accordance with numbers 1-8 wherein said plastic sheet is formed of a thermoplastic resin.

15

11. Processes in accordance with numbers 1-8 wherein said plastic sheet is self supported.

12. Processes in accordance with numbers 1-8 wherein said  
20 plastic sheet is self supported.

13. Processes in accordance with numbers 1-8 wherein said  
releasable support sheet is a one-side coated paper.
14. Processes in accordance with numbers 1-8 wherein the  
5 releasable support sheet is a silicone coated paper.
15. Processes in accordance with numbers 1-8 wherein the  
releasable support sheet is a sheet of polyethylene.
- 10 16. Processes in accordance with numbers 1-8 wherein the  
releasable support sheet is paper coated with a removable or  
dissolvable adhesive.
- 15 17. Processes in accordance with numbers 1-8 wherein said  
paper consists of a triple coated paper.
18. Processes in accordance with numbers 1-8 wherein said  
paper consists of a zinc oxide coated electrostatic copying  
paper.

19. Processes in accordance with numbers 1-8 wherein a white color layer has been applied on the surface of said paper in order to serve as background of said indicia or image.

5

20. Processes in accordance with numbers 1-8 wherein said paper consists of photo quality in jet printing paper.

Although the present invention has been described with reference to preferred embodiments, numerous modifications and variations can be made and still the result will come within the scope of the invention. No limitation with  
5 respect to the specific embodiments disclosed herein is intended or should be inferred. Each apparatus embodiment described herein has numerous equivalents.

I CLAIM:

1. A method to transfer an image from a paper to a substrate, the method comprising the steps of:

providing a multi-layered transfer sheet having a

5 rubber based hot melt adhesive core surrounded on both sides with a silicone layer and thereupon fastened a top and bottom liner;

removing the bottom liner along with the adjacent silicone layer, thereby exposing the hot melt adhesive core;

10 affixing the hot melt adhesive core to the image which is on the paper;

soaking off the paper, thereby exposing the image adhered to the hot melt adhesive core;

15 affixing the image along with the hot melt adhesive core and the top liner to the substrate;

covering the top liner with a wet press cloth;

applying heat and pressure to the wet press cloth in a sufficient quantity each to cause a migration of a portion less than 100% of the hot melt adhesive core through the image into the substrate; and

20 removing the wet press cloth, thereby leaving the top layer, the hot melt adhesive core and the image adhered to the substrate.

2. The method of claim 1 further comprising the step of using ink to create the image.

5 3. The composition of layered materials formed by the method of claim 1.

4. The method of claim 1, wherein the top and bottom liners comprise a thermoplastic resin.

10 5. The method of claim 1, wherein the paper initially having the image comprises a triple coated paper.

6. The method of claim 1 further comprising the step of using a metal plate at about 120°C under about 1-10  
15 pounds pressure to provide the sufficient quantity of heat and pressure.

7. A process for decoration of surfaces through transfer of indicia or images from paper to said  
20 surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, the process comprising the steps of:

combining a releasable support sheet with a plastic sheet;

stripping said transfer adhesive of its primary  
liner and placing the combined sheet obtained  
in step a) with its plastic surface in contact  
with the tacky adhesive surface.

5 stripping said transfer adhesive of its second  
liner and positioning the composite sheet  
obtained in step b) with its tacky side in  
contact with the indicia or image bearing layer  
of said paper.

10 obtaining an "iron on decal" by washing said  
indicia or image-including composite sheet in  
water to soften the paper and removing the  
same, thereby exposing the image or indicia  
retained in the composite sheet.

15 applying the decal obtained in Step d) by  
positioning the same with the image or indicia  
in contact with said surface.

applying heat over the releasable support sheet,  
thereby causing said adhesive to expand and  
20 migrate through the layer forming the image or  
indicia, into said substrate.

stripping the decal of said releasable support  
sheet.

8. A process for decoration of surfaces through  
5 transfer of indicia or images from paper to said  
surfaces by means of composite sheets derived from  
rubber based hot melt transfer adhesive, which includes:

stripping said transfer adhesive of its primary  
liner and positioning it with its tacky surface in  
10 contact with the indicia or image bearing layer of  
said paper;

combining a releasable support sheet with a  
plastic sheet;

stripping said adhesive of its secondary liner and  
15 placing the combined sheet obtained in step b) with its  
plastic surface in contact with the tacky surface of  
said paper.

obtaining an "iron on decal" by washing said  
indicia or image-including composite sheet in water to  
20 soften the paper and removing the same, thereby



exposing the image or indicia retained in the composite sheet.

applying the decal obtained in Step d) by positioning the same with the image or indicia in contact with said surface.

applying heat over the releasable support sheet, thereby causing said adhesive to expand and migrate through the layer forming the image or indicia, into said substrate.

stripping the decal of said releasable support sheet.

9. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer adhesive, which includes:

combining a releasable support sheet with a plastic sheet;

stripping said transfer adhesive of its primary liner and placing the combined sheet obtained

in step a) with its plastic surface in contact  
with the tacky adhesive surface.

stripping said transfer adhesive of its second  
liner and positioning the composite sheet  
5 obtained in Step b) with its tacky side in  
contact with the indicia or image bearing layer  
of said paper.

obtaining an "iron on decal" by washing said or  
image-including composite sheet in water to  
10 soften the paper and removing the same, thereby  
exposing the image or indicia retained in the  
composite sheet.

converting the iron-on decal obtained in Step d)  
into an "adhesive decal" by stripping a second  
15 piece of said transfer adhesive of its primary  
liner and positioning the decal obtained in  
step d) with its indicia or image in contact  
with said transfer adhesive exposed tacky  
surface.

stripping the adhesive decal obtained in step e) of  
its liner and positioning the same with the  
exposed adhesive in contact with said surface.  
stripping the decal of said releasable support  
sheet.

5

# ABSTRACT

A composite image transfer sheet is prepared by combining a layer of rubber based hot melt transfer adhesive with a thermoplastic or thermosetting film which, if thin, may be attached to a releasable support sheet. The composite sheet thus derived is positioned with its adhesive surface in contact with the image to be transferred, said image has been created by printing, copying or painting by hand on preferably the non coated side of one-side coated paper, on triple coated paper, on zinc oxide coated electrostatic copying paper, or on any kind of paper. The laminate is submerged in water and the image paper base washed away. The decal thus obtained is positioned on the desired substrate such as a shirt and pressed at low temperature and with little pressure. This causes the adhesive to expand and migrate through the respective layers of printing inks, copy toner, paint and zinc oxide, thereby providing images transferred to fabric with the texture of the same, as well as a firm and machine washable anchorage. Decals obtained by this process may also be applied with adhesive, paint or varnish and may be provided with a white backing layer.

Transfer adhesive or contact adhesive (F<sub>in</sub> 50-60)

100

Fig. 1  
(prior art)

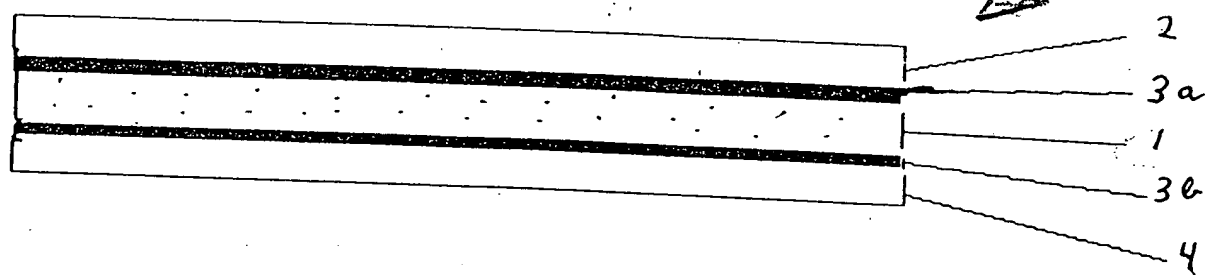


Fig. 2  
(prior art)

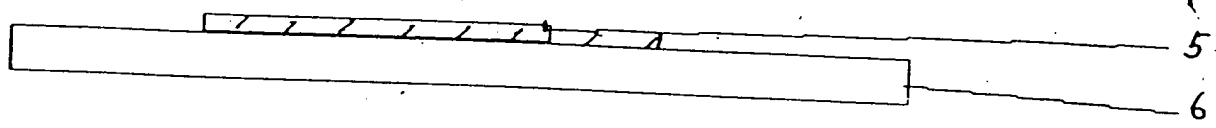


Fig. 3

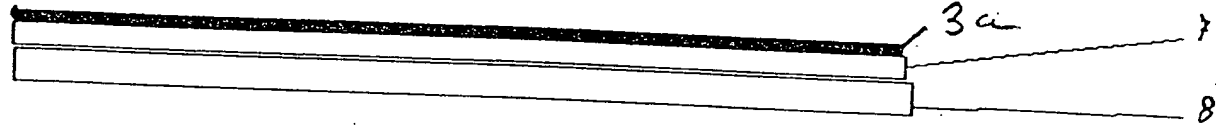


Fig. 4

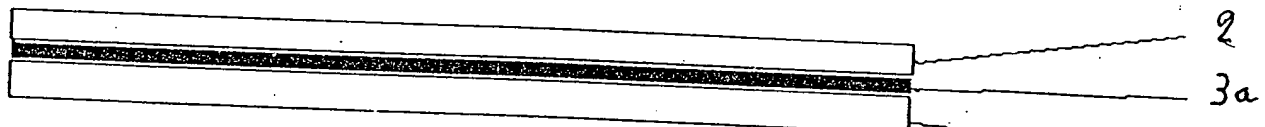


Fig. 5

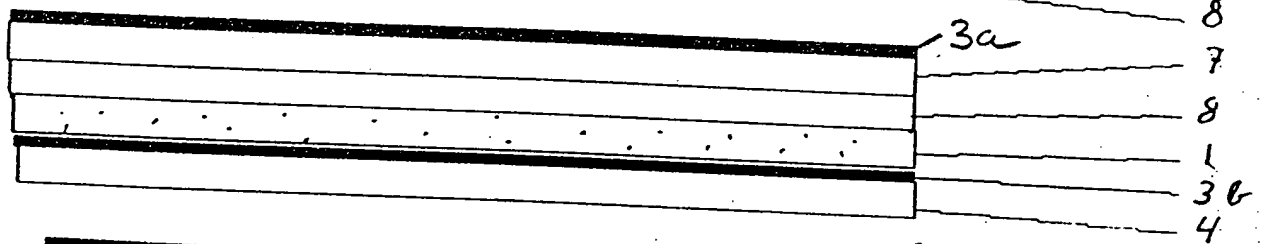


Fig. 6

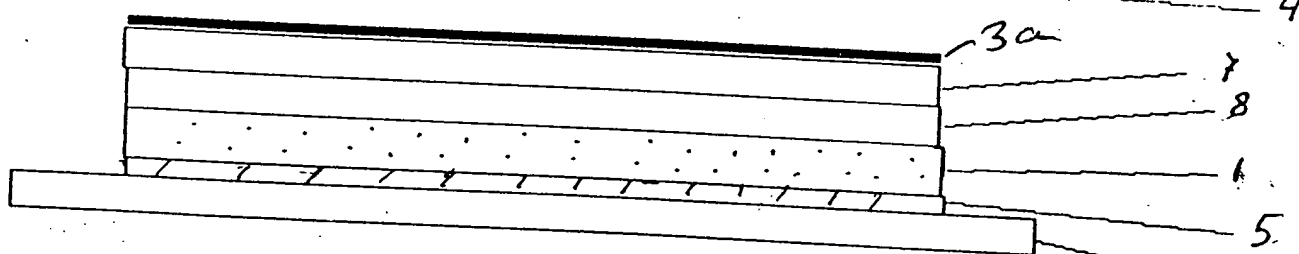


Fig. 7

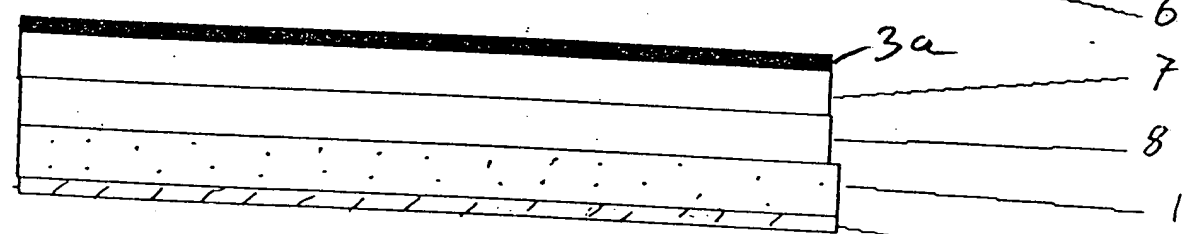


Fig. 8

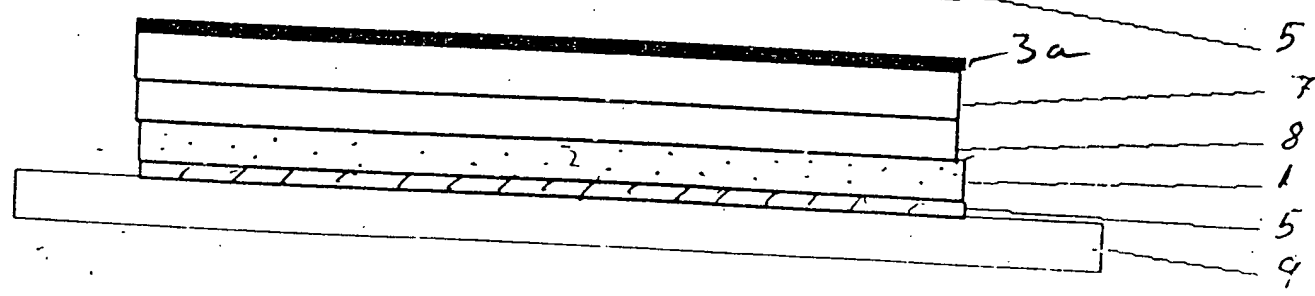


Fig. 9

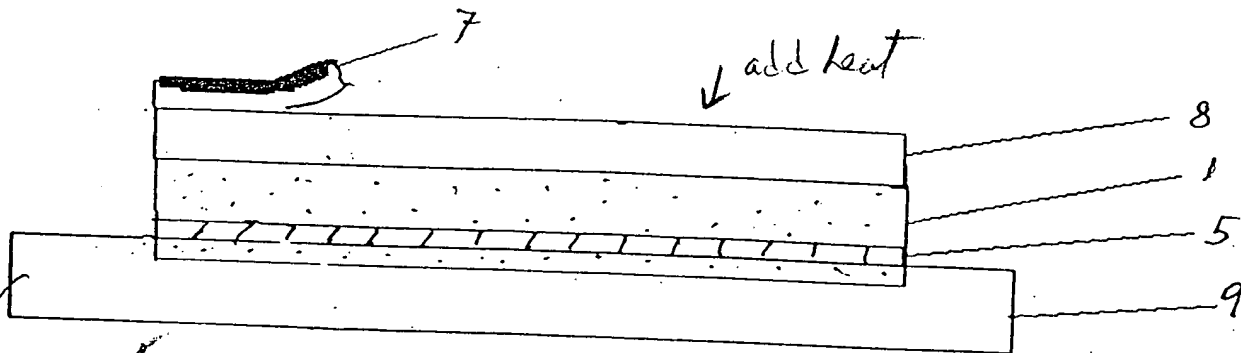


Fig. 10

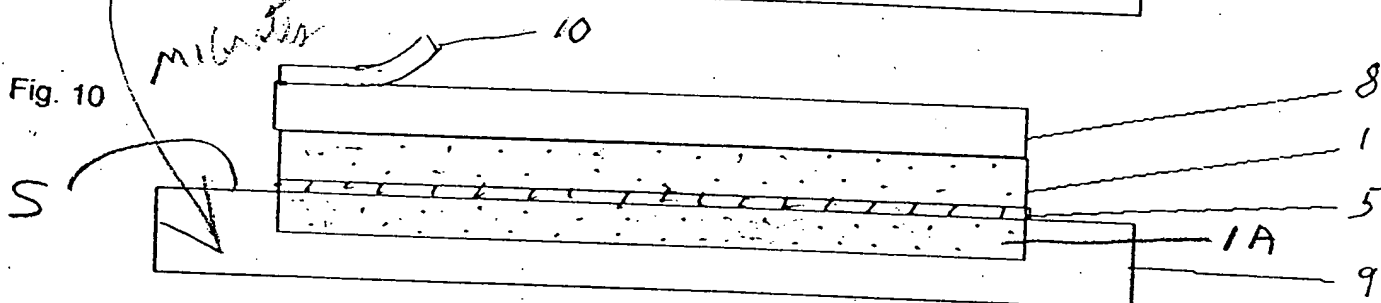


Fig. 11

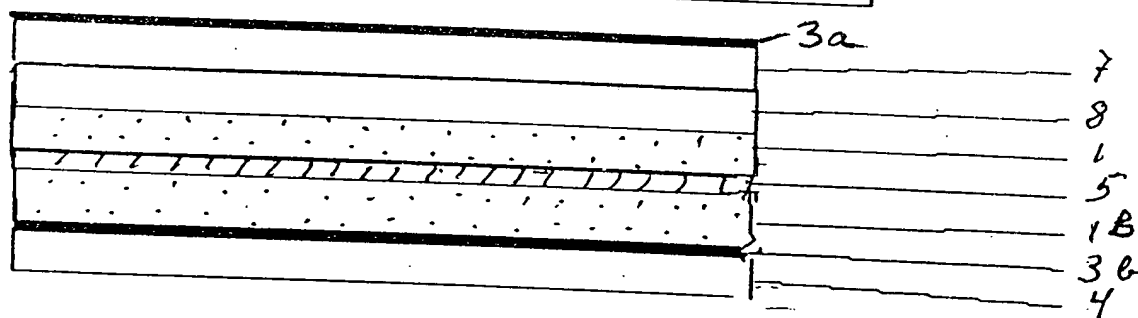


Fig. 12

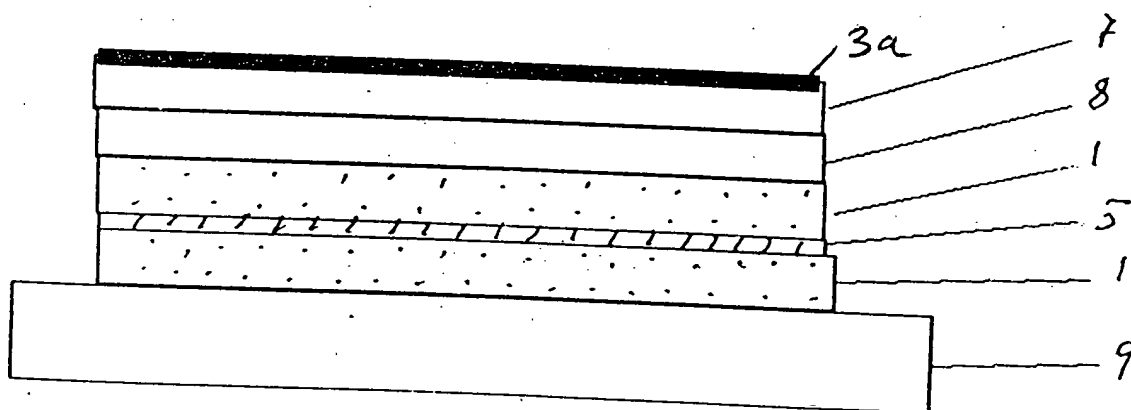


Fig. 13

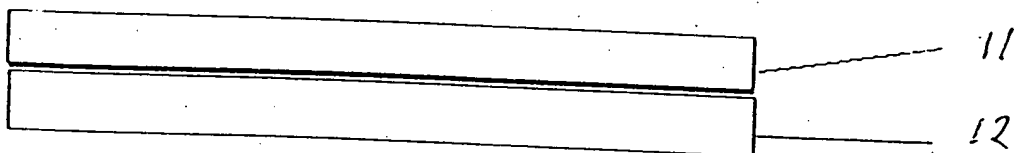


Fig. 14

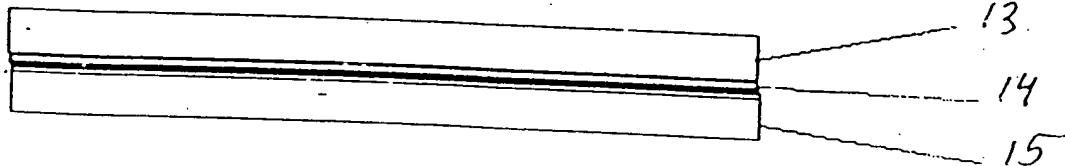
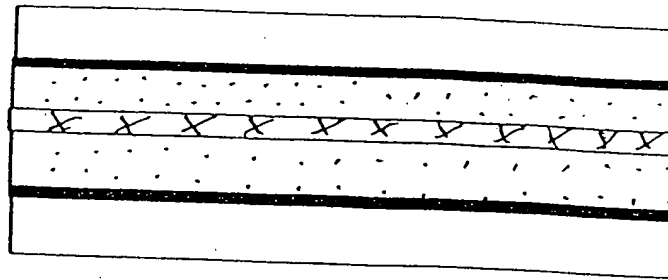


Fig. 15

150  
↙



4a

3a

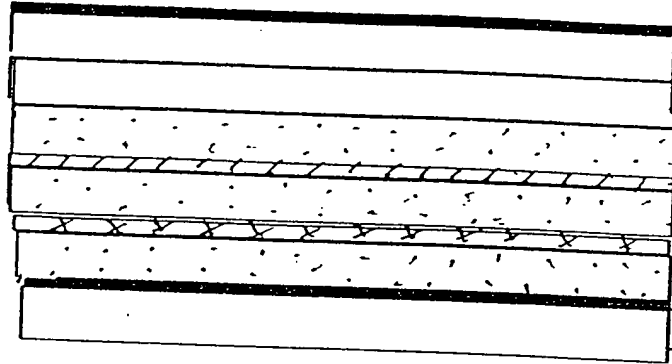
1a

12 or 1

1b

3b

Fig. 16



4b

7

8

1

5

1b

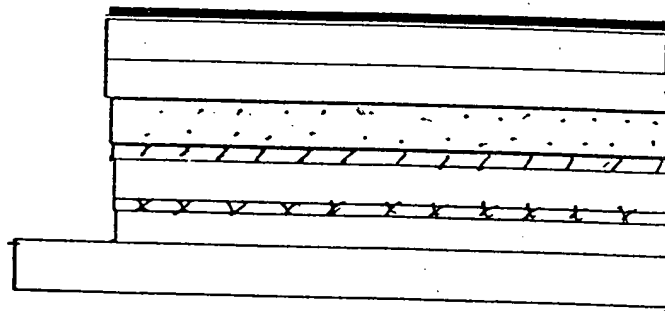
12 or

1a

3a

4a

Fig. 17



7

8

1

5

1a

12 or 1

1b

9



Fig. 18



Fig. 19

**Attachment 5**

**A Comparison Between the Filed Patent Application, Prepared by  
Mr. Martin, and the Draft Application, Prepared by the Inventor**

**5 Pages**



**Attachment 5,**

**A Comparison Between the Filed Patent Application Prepared by Mr. Martin and the Draft Application Prepared by the Inventor**

<u>Patent Application</u>			Explanation	<u>Draft Application</u>		
Page	Line	to Line		Page	Para	Sub-Para
1	1	18	Introduction prepared by Mr. Martin			
1	19	26	Word by word	3	3	
2	1	2	" " "	3	3	
2	3	18	" "	3	4, 5, 6	
2	18	24	Slight variation of the text of the draft	4	1	
3	1	19	Mostly word by word	4.....2		
3	22	25	Drafted by Mr. Martin			
4	1	23	" " " "			
5	1	10	Word by word	10	3	1 - 5
5	10	20	" " "	11		1 - 3
6	1	20	Corrected version, done by the inventor on Feb. 19		11	
3 - 8						
7	1	20	" " " " " " " " " "	11		8 - 15
8	1	7	Word by word	11		16
8	11	17	" " "	12	1	
8	17	22	by Mr. Martin who had not heard of transfer adhesive.			
9	1	9	Word by word	12	2	
9	10	25	" " "	12	3	
10	1	8	" " "	12	3	
10	9	15	" " "	12	4	
10	16	25	" " "	12	5	
11	1	4	" " "	12	5	
11	5	13	" " "	12	6	
11	14	16	" " " "preferably by soaking in water" added by Mr. Marti	13	2	
11	17	18	" " " "such as a shirt to be decorated" " " "			
11	19	25	" " "	13	13	3
12	1	3	" " "	13	4	
12	4	14	" " "	13	4	
12	15	18	" " "	13	5	
12	19	24	" " " "the hot melt" added by Mr. Martin	13	6	
13	1	13	" " "	13	7	
13	14	21	" " "	13	8	
13	22	25	" " "	13	9	
14	1	12	" " " Mr. Martin made a slight change.	14	2	
14	13	22	" " " Wording of line 22 & 23 Changed by Mr. M.	14	2	
14	23	25	" " "	14	3	
15	1	4	" " " Mr. Martin added "preferably" on line 2	14	4	
15	5	7	" " "	14.....4		
15	8	21	" " "	14	5	
15	24	25	" " "	14	6	
16	1	17	" " "	14	7	
16	18	25	" " "	15	1	
				15	2	

Attachment 13,

**A Comparison Between the Filed Patent Application Prepared by Mr. Rickman and the Draft Application Prepared by the Inventor**

<u>Patent Application</u>			Explanation	<u>Draft Application</u>		
Page	Line to	Line		Page	Para	Sub-Para
1	1	18	Introduction prepared by Mr. Martin			
1	19	26	Word by word	3	3	
2	1	2	" " "	3	3	
2	3	18	" "	3	4, 5, 6	
2	18	24	Slight variation of the text of the draft	4	1	
3	1	19	Mostly word by word	4.....2		
3	22	25	Drafted by Mr. Martin			
4	1	23	" " " "			
5	1	10	Word by word	10	3	1 - 5
5	10	20	" " "	11		1 - 3
6	1	20	Corrected version, done by the inventor on Feb. 19		11	
3-8						
7	1	20	" " " " " " " "	11		8 - 15
8	1	7	Word by word	11		16
8	11	17	" " "	12	1	
8	17	22	by Mr. Martin who had not heard of transfer adhesive.			
9	1	9	Word by word	12	2	
9	10	25	" " "	12	3	
10	1	8	" " "	12	3	
10	9	15	" " "	12	4	
10	16	25	" " "	12	5	
11	1	4	" " "	12	5	
11	5	13	" " "	12	6	
11	14	16	" " " "preferably by soaking in water" added by Mr. Marti	13	2	
11	17	18	" " " "such as a shirt to be decorated" " " "		13	3
11	19	25	" " "	13	4	
12	1	3	" " "	13	4	
12	4	14	" " "	13	5	
12	15	18	" " "	13	6	
12	19	24	" " " "the hot melt" added by Mr. Martin	13	13	7
13	1	13	" " "	13	8	
13	14	21	" " "	13	9	
13	22	25	" " "	14	2	
14	1	12	" " " Mr. Martin made a slight change.	14	3	2
14	13	22	" " " Wording of line 22 & 23 Changed by Mr. M.	14	4	
14	23	25	" " "	14.....4		
15	1	4	" " " Mr. Martin added "preferably" on line 2	14	5	
15	5	7	" " "	14	6	
15	8	21	" " "	14	7	
15	24	25	" " "	15	1	
16	1	17	" " "	15	2	
16	18	25	" " "			

<u>Patent Application</u>			<u>Explanation</u>	<u>Draft Application</u>		
<u>Page</u>	<u>Line</u>	<u>to Line</u>		<u>Page</u>	<u>Para</u>	<u>Sub-Para</u>
17	1	7	Word by word	15	2	
17	8	21	" " "	15	3	
17	22	25	" " "	15	4	
18	1	9	" " "	15	4	
18	10	20	" " "	15	5	
18	21	25	Standard text added by Mr. Martin			
19	1	2	" " " " " "			
19	3	10	Introduction to Fasson Data Sheet by Mr. Martin. Data Sheet provided by inventor			
19	12	25	Fasson Data Sheet			
20	1	25	" " "			
21	1	19	" " "			
21	24	31	Word by word			
22	1	10	" " "	4	3	
22	11	20	" " "	4	3	
23	1	2	" " "	4	4	
23	2	2	" " " Change from "I have tried" to "were tried" by Mr. Martin.	4	4	
23	3	12	" " "	4	5	
23	13	21	" " "	4	5	
24	1	15	" " "	5	1	1 & 2
24	17	20	" " "	5	2	1-3
25	1	12	" " "	5	3	1
25	13	17	" " "	5	3	2-5
25	18	21	" " "	5	4	
26	1	4	" " "	5	5	1
26	5	15	" " "	5	5	1
26	17	21	" " "	5	5	2 & 3
27	1	4	" " "	6	2	
27	5	17	" " "	6	2	
27	18	21	" " "	6	3	
28	1	2	" " " Mr. Martin added: "incorporated herein by reference"	6	4	
28	3	21	" " "	6	4	
29	1	3	" " "	6	5	
29	4	5	" " "	6	5	
29	5	21	" " "	6	6	
30	1	6	" " "	7	1	1-3
30	9	14	" " "	7	1	4 & 5
30	14	18	Mr. Martin has changed the text, though I seem to remember the wording, used somewhere in the draft.	7	2	
30	19	21	Word by word			
31	1	13	" " "	7	3	
31	14	21	" " "	7	4	
32	1	10	" " "	7	5	
32	11	21	" " "	8	1	
33	1	5	" " "	8	2	
33	6	19	" " "	8	2	
33	20	21	" " "	8	3	
34	1	5	" " "	8	4	
34	16	21	" " "	8	4	
				8	5	

Patent Application

Explanation

Draft Application

<u>Page</u>	<u>Line to</u>	<u>Line</u>		<u>Page</u>	<u>Para</u>	<u>Sub-Para</u>
35	1	10	Word by word	8	5	
35	11	21	" " "	9	1	
36	1	5	" " "	9	1	
36	6	20	Mr. Martin's summary of transfers to dark backgrounds.			
37	1	2	" " " " " " " " "			
37	3	13	Word by word	9	3	
37	14	21	" " "	9	4	
38	1	5	" " "	9	4	
38	6	19	" " "	9	5	
38	20	21	" " "	10	1	
39	1	16	" " " Mr. Martib has made a few minor chances of words	10	1	
39	17	18	Mr. Martin has wrongly stated "paper backing" instead of "support paper"			
39	18	20	Word by word	10	1	
40	1	2	" " "	10	1	
40	3	21	Explanation by Mr. Martin based on	10	1	
41	1	7	" " " " " " " " information provided by the inventor			
41	12	21	Word by word	16	1	1&2
42	1	18	" " "	16	1	3-7
42	20	21	" " "	16	2	
43	1	21	" " "	16	2	1-5
44	1	5	" " "	16	2	6-7
44	8	15	" " "	16	3	1&2
44	15	21	" " "	16/17	3	2&3
45	1	16 -	" " "	16/17	3	4 -7
45	18	21	" " "	17	2	
46	1	21	" " "	17	2	1-5
47	1	5	" " "	17	2	6-7
47	6	21	" " "	17	3	1-4
48	1	9	" " "	17/18	3	5-7
48	10	21	" " "	18	2	1-3
49	1	13	" " "	18	2	3-7
49	14	21	" " "	18	3	1
50	1	21	" " "	18	3	2-5
51	1	5	" " "	18	3	6&7
51	6	13	" " "	18	4	1
51	14	21	" " "	18/19	4	2&3
52	1	14	" " "	18/19	4	4-6
52	15	21	" " "	19	2	1
53	1	12	" " "	19	2	2-5
53	13	14	" " "	19	3	
53	16	17	" " "	19	4	
53	19	20	" " "	19	5	
54	1	2	" " "	19	6	
54	4	5	" " "	19	7	
54	7	8	" " "	19	8	
54	10	13	" " "	20	1	

**Patent Application**

**Explanation**

**Draft Application**

**Page Line to Line**

**Page Para Sub-Para**

54 14 15 Word by word

54 17 19 " " "

55 1 4 " " "

55 6 7 " " "

56 1 7 Text by Mr. Martin

57 1 24 Claim 1 drafted by Mr. Martin, not having any relation to this invention.

58 1 16 Claims 2 - 6 drafted by Mr. Martin, not having any relation to this invention.

58 18 25 Claim 7, almost word by word my Claim 1

59 1 21 " " " " " " "

60 1 2 " " " " " " "

60 4 20 Claim 8, word by word my Claim 2

61 1 11 " " " " " " " "

61 14 20 Claim 9 " " " " " " 3

62 1 19 " " " " " " " "

63 1 5 " " " " " " " "

6&7

64 1 21 Abstract, almost word by word the Abstract on the from page of the Draft Application

20 2

20 3

20 4

20 5

16 1 1

16 1 2-6

16 1 7

16 2 1 4

16 2 4-7

16 3 1&2

16/17 3 3-5

16/17 3

July 2, 2004

Oscar A. Strom  
Inventor

**Attachment 6**

**Copy of Letter to Mr. Martin Regarding Claims 1 – 6 of the Patent  
Application**

8 Pages

# Calcola, Inc.

*afstrom@yahoo.com*

## Mexican Address

*Avenida Residencial 207  
Club de Golf Chiluea  
52930 Atizapan, Edo. Mex  
Tel/Fax 52-55- 5308-1575  
Ref Rick Martin 40510*

## US Address

*Apt. 325  
PO Box 60326  
Houston 77 205*

May 10, 2004

Patent Law Offices of Rick Martin  
416 Coffman Street  
Longmont, CO 80501  
USA

Dear Mr. Martin:

Re: Claims 1 – 7 of Patent Application

The drawings are completed, and the language has been checked and corrections to be made identified. Before forwarding these, I would be most obliged if you could respond to the following questions related to Claims 1 –7. By the way, the English language expert did not find any "foreign language errors

Maybe I was remiss in not having checked the claims you had written. I thought that the head of a Patent Firm with an international reputation for success would draft perfect claims, particularly so after having called the claims I had drafted "home made". However, due to the fact that the language expert had made a comment in respect of the order of words of Claim 1, I had to take a look at it.

I regret that I cannot approve Claims 1 - 7, as written by you, because what you describe in these claim is something that is very different from my invention. Furthermore, there are several errors. These claims do also display a lack of understanding of my invention and of the problems involved in image transfer.

In order to make sure that we talk about the same thing, I have attached Claim 1 with the various sentences or sub-paragraphs numbered, as Appendix 1. I have also attached, as Appendix 2, my "home made" Claim 1

Please find below my comments, sentence by sentence

- (i) A method to transfer an image from a paper to a substrate, the method comprising the steps of providing a multi-layered transfer sheet having a rubber based hot melt adhesive core surrounded on both sides with a silicone layer and thereupon fastened a top and a bottom liner.

Anybody versed in the art would immediately ask: How do you produce this

adhesive core, and how do you apply the silicone layers? How do you give them the adequate release properties, and how do you test these? Furthermore, how do you fasten the liners? I would like to learn the best mode of this?

I think that a patent must have a basis in reality, at least for me to be associated with it. What you have described is a transfer adhesive with two liners, and the method described of obtaining it is very different from the manner in which such adhesive is being manufactured. In my opinion, it would not work, and if it did, why would anybody chose such a clumsy and uneconomic method as the one you have described. Furthermore, as transfer adhesives exist, and have been available in the market for many, many years, why include a step related to its manufacture,? *Comes to mind that you told me over t he telephone that you never heard of transfer adhesive or of Fasson, one of the most well known manufacturers of it.*

In real life, the transfer adhesive is manufactured in a very different manner than the one you describe in the Claim. It is either extruded or knife coated on a silicone coated liner with predetermined release properties relative to the second silicone coated liner, which is being applied on top of the adhesive. The release properties of the two silicone liners are determined with great exactitude before the production begins. Normally, the bottom liner has a greater release force than the top liner, which will be peeled off first. I have witnessed this manufacture in USA, Canada, Sweden and Mexico. During the period 1971 - 1977, I followed the manufacture of the " B-Film" transfer adhesive used in my early version Lift-a-Picture kits during monthly visits to the Fasson factory in Painesville, Ohio.. .

( ii) removing the bottom liner along with the adjacent silicone layer, thereby exposing the hot melt adhesive core.

As I said above, in real life it is the top liner that is first being removed. However, you have not said a word about the release properties, or how the liner has been fastened to the silicone layer. If it is a real life transfer adhesive, then what you say cannot be accomplished, and the user will have to be satisfied by removal of the top liner. However,



you are just jumping one of the greatest problems I have had in designing a composite sheet that works, namely the top release liner.

(iii) affixing the hot melt adhesive core to the image which is on paper;

No comments

(iv) soaking off the paper, thereby exposing the image adhered to the hot melt adhesive core;

Just like that? Do you really think this is that simple? I have included a letter size sheet of transfer adhesive. Go ahead and affix it to which ever image you like, and then you soak the image paper backing off. The problems of this step are manifold and what you have written does not work, and anybody versed in the art knows that.

So what are these difficulties? The adhesive is delicate. It does not have a very firm hold in either silicone coated liner,. Cut out a small piece from the sheet I have provided.. Remove the top liner (the one that is possible to remove first). Place the piece on the table, adhesive up. Now, take a paper clip and press it down in the adhesive and then move the clip along the piece. What happens?. The adhesive looses its hold on the bottom liner and the clip makes a hole in the adhesive. The same thing happens when you "soak off" the paper. You have to use force to remove it, even if it has been hours or over night in water. When you move the paper, in order to remove it, you also move the image and the adhesive. The adhesive thereby loses its hold on the liner, and as result, there will be a hole in the adhesive and the image.

At Appendix 3, (a) I have attached 3 small prints in a clip, for you to use. At (b) I have also attached a similar print, on which I have first applied the adhesive, as stated in the Claim, where after I have tried to soak off the paper, with disastrous result. Please show me how it should be done!.

At Appendix 3 (c) is a laminate with the paper "soaked off". I used a piece of a laminate in accordance with my "home made claim". I first removed the liner, exposing the adhesive, thereafter I applied it with the adhesive in contact with the print, I then submerged the laminate and soaked off the paper. Why did I succeed with my laminate? Because the adhesive has a firm hold in the plastic film, a hold that will safely withstand forceful paper removal. Did you understand?

(v) affixing the image along with the hot melt adhesive core and the top liner to the substrate

This is only possible to do, when you have soaked-off the image paper backing. But it is not possible with the laminate of Claim 1. unless you use a special paper. By carefully studying the text of the patent application you will find that there is one case where the soaking off is described as part of my invention. In order to be able to demonstrate what happens in the next step, I have used another sample of one of the prints at (a), on which I have applied the transfer adhesive and soaked off the paper backing, See (d). It is a bit rough, because I have tried to apply it by ironing, which does not work. See (vi) below..

(vi) covering the top liner with a wet press cloth; applying heat and pressure to the wet press cloth in a sufficient quantity each to cause the migration of a portion less than 100% of the hot melt adhesive core through the image into the substrate; and removing the wet press cloth, thereby leaving the top layer (what is that ?), the hot melt adhesive core and the image adhered to the substrate;


This does not work. Who told you that the adhesive in the Claim 1 configuration would migrate, just because heat is being applied? .

A sample of the laminate you describe in (iv) with the image paper backing soaked off, at (d). was placed in the manner you have stated in (v) and pressed and pressed in the manner you describe in (vi), with and without a wet cloth, but the adhesive did not migrate!. Why? I have also applied a laminate of the kind described in my "home made" claim to a print of the kind at (a). I then soaked off the paper and ironed on the laminate to T-shirt cotton. How come that the adhesive of that laminate migrated? I then removed the top support paper. See (e)

In the claim, you do not say anything about what happens or what is to be done with the top liner. Should it remain? Or should it be removed? In order to demonstrate what happens to the transferred image, I have produced another laminate in accordance with Claim 1, and soaked off the paper. In view of the fact that a laminate of this kind cannot be ironed on, I have instead pasted it to a piece of balsa wood with the liner on, hiding the image. See (f). Is that a way to decorate a surface? If not, you may carefully lift the liner at the upper right corner, and peel it off. An adhesive image! Perhaps you think that is the way to decorate surfaces?

I am expecting to receive your explanation relative the above comments at your earliest possible convenience... ..

Faithfully,

  
Oscar af Strom

cc. To various parties interested in my invention.

# Appendix 1

## I CLAIM:

1. (i) A method to transfer an image from a paper to a substrate, the method comprising the steps of:

providing a multi-layered transfer sheet having a  
5 rubber based hot melt adhesive core surrounded on  
both sides with a silicone layer and thereupon  
fastened a top and bottom liner;

(ii) removing the bottom liner along with the adjacent  
silicone layer, thereby exposing the hot melt  
10 adhesive core;

(iii) affixing the hot melt adhesive core to the image  
which is on the paper;

(iv) soaking off the paper, thereby exposing the image  
adhered to the hot melt adhesive core;

15 (v) affixing the image along with the hot melt adhesive  
core and the top liner to the substrate;

(vi) covering the top liner with a wet press cloth;

applying heat and pressure to the wet press cloth in

a sufficient quantity each to cause a migration of

20 a portion less than 100% of the hot melt adhesive

core through the image into the substrate; and

removing the wet press cloth, thereby leaving the

top layer, the hot melt adhesive core and the

image adhered to the substrate.

## Appendix 2

leveled out by heat pressing at rayon or silk temperature. Higher temperatures may cause some of the darker colors to migrate and give the image <sup>a</sup>darker tone. There are many adhesive decals or "stickers" available in the market.

5 However, none of them can be applied on light as well as dark fabrics without heat pressing and still become machine washable. For this reason, decals for surface decoration in accordance with this invention are unique.

10

### DISCUSSION OF DEVELOPMENTAL PROCESS

Below follows a summary of the above-noted invention.

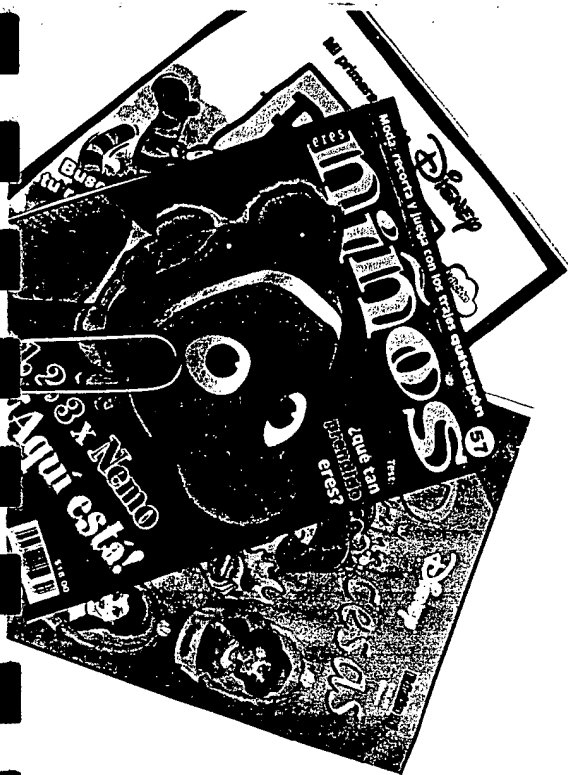
1. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of composite sheets derived from rubber based hot melt transfer  
15 adhesive, the process comprising the steps of:

- a) combining a releasable support sheet with a plastic sheet;
- b) stripping said transfer adhesive of its primary liner and placing the combined sheet obtained in  
20 step a) with its plastic surface in contact with the tacky adhesive surface.

- c) stripping said transfer adhesive of its second liner and positioning the composite sheet obtained in step b) with its tacky side in contact with the indicia or image bearing layer of said paper.
- 5 d) obtaining an "iron-on decal" by washing said indicia or image-including composite sheet in water to soften the paper and removing the same, thereby exposing the image or indicia retained in the composite sheet.
- 10 e) applying the decal obtained in step d) by positioning the same with the image or indicia in contact with said surface.
- f) applying heat over the releasable support sheet, thereby causing said adhesive to expand and migrate through the layer forming the image or
- 15 indicia, into said substrate.
- g) stripping the decal of said releasable support sheet.

20 2. A process for decoration of surfaces through transfer of indicia or images from paper to said surfaces by means of

Appendix J



(a)



(b)



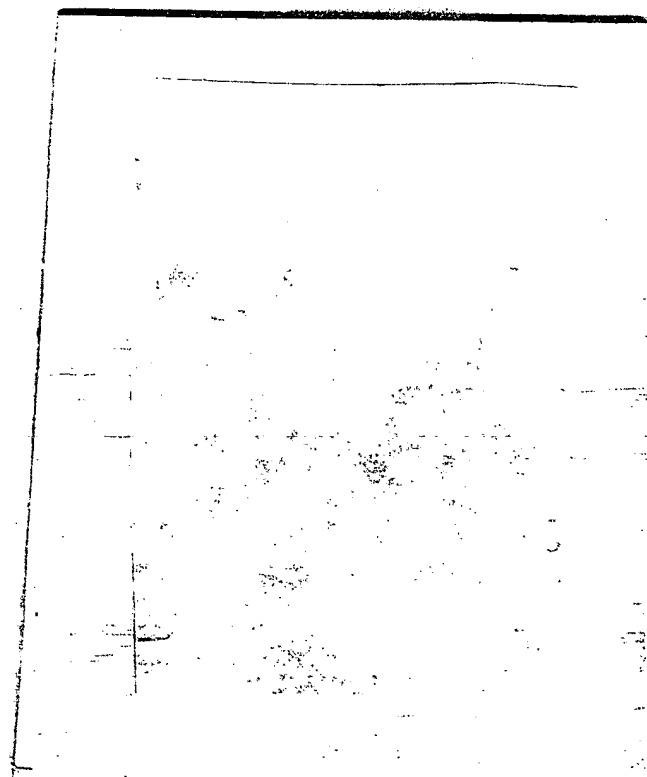
(c)



(d)



(e)



(f)

**Attachment 7**

**Copy of Letter from Mr. Martin , dated June 3, Under cover of which the Forms for Declaration of Power of Attorney and Notice to File Missing Parts was forwarded.**

**1 Page**



PATENT LAW OFFICES OF RICK MARTIN, P.C.

416 COFFMAN STREET  
LONGMONT, COLORADO, U.S.A. 80501  
303-651-2177 Fax 303-678-9953  
[www.patentcolorado.com](http://www.patentcolorado.com)  
[rmartin@patentcolorado.com](mailto:rmartin@patentcolorado.com)

June 3, 2004

RICK MARTIN, Reg. Pat. Atty  
MARGARET L. POLSON, Reg. Pat. Atty  
AILEEN LAW, Reg. Pat. Atty  
SARA A. GOSSMAN, Reg. Pat. Atty  
Technical Specialists  
ARMAND (A.J.) FERRARO, M.E.E.

Mr. Oscar af Strom  
Avenida Residencial 207  
Club de Golf Chiluca  
52930 Atizapan  
Edo. Mex  
MEXICO

RE: U.S. Patent Application  
*Transfer Method for Surface Decoration*  
Filed 2/20/2004  
Ref. No. RM666

Dear Mr. Strom:

Enclosed is a Declaration and Power of Attorney, which requires your signature. This Declaration must be filed in the USPTO by **July 17, 2004**. Enclosed is a copy of the Notice to File Missing Parts with the due date shown. I am also enclosing a copy of the specification as filed for your review.

Your email asks for more work in the form of a preliminary amendment. I decline to do this or any work without a retainer. I will forward your Declaration and get the drawings done when you pay the fees outlined in my last letter.

If you choose you have at least a year to retain a new lawyer, after you cure the missing parts issues.

Sincerely,

Rick Martin

/lc  
enclosure



**Attachment 8**

**Copy of transmittal Letter and Forms re REQUEST FOR  
WITHDRAWAL AS ATTORNEY OR AGENT, duly completed and  
signed by Mr. Martin ,  
6 Pages**

TRANSMITTAL LETTER  
(General - Patent Pending)



Docket No.  
RM666

In Re Application Of: Oscar af Strom

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/783,971	2/20/2004		23996	1734	

Title: Transfer Method for Surface Decoration

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Notice of Withdrawl As Attorney of Record  
PTO Form SB/38 Request for Withdrawl As Attorney or Agent

in the above identified application.

- ☒ No additional fee is required.
- ☐ A check in the amount of \_\_\_\_\_ is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. 50-0617 as described below.
- ☐ Charge the amount of \_\_\_\_\_
- ☒ Credit any overpayment.
- ☒ Charge any additional fee required.

Signature

Dated: 6-10-04

Rick Martin Reg. No. 32,267  
Patent Law Offices of Rick Martin, P.C.  
416 Coffman Street  
Longmont, CO 80501  
Phone: 303-651-2177  
Fax: 303-678-9953

I certify that this document and fee is being deposited on June 16, 2004 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature of Person Mailing Correspondence

Katharine A. Polson

Typed or Printed Name of Person Mailing Correspondence

CC:



PTO/SB/83 (06-03)

Approved for use through 11/30/2005. OMB 0651-0035  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**REQUEST FOR WITHDRAWAL  
AS ATTORNEY OR AGENT**

Application Number	10/783,971
Filing Date	02/20/2004
First Named Inventor	Oscar af Strom
Art Unit	1734
Examiner Name	
Attorney Docket Number	RM666

To: Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

I hereby apply to withdraw as attorney or agent for the above identified patent application.

The reasons for this request are:

- 1) Created rush to file on a non-existent provisional.
- 2) Approved a spec and new claims, but now says he did not read them.
- 3) Does not pay his bill on time.
- 4) Demands re-work for free.

**CORRESPONDENCE ADDRESS**1. ☐ The correspondence address is NOT affected by this withdrawal.2. ☒ Change the correspondence address and direct all future correspondence to:☐ Customer Number

OR

☒ Firm or  
Individual Name

Oscar af Strom

Address

Avenida Residencial 207

Address

Club de Golf Chiluea

City

52930 Atizapan

State

ZIP

Country

Edo Mexico

Telephone

(55) 5308-1575

Fax

(55) 5308-1575

☒ This request is made on behalf of myself and☐ all the attorneys/agents of record,☐ the attorneys/agents (with registration numbers) listed on the attached paper(s), or☒ the attorneys/agents associated with Customer Number

23996

This request is enclosed in triplicate (including any attachments).

Name

Rick Martin

Signature

Registration No.

32,267

Date

6-10-04

**NOTE:** Withdrawal is effective when approved rather than when received. Unless there are at least 30 days between approval of withdrawal and the expiration date of a time period for response or possible extension period, the request to withdraw is normally disapproved.

This collection of information is required by 37 CFR 1.36. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you are required to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

---

In re Application of:	Oscar af Strom	Group Art Unit:	1734
Serial No.:	10/783,971	Examiner:	
Filed:	02/20/2004	Attorney Docket:	RM 666
For:	Transfer Method for Surface Decoration		

---

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**NOTICE AND REQUEST OF WITHDRAWAL AS ATTORNEYS OF RECORD**

Dear Sir:

Pursuant to Rule 37 CFR 1.36 and MPEP Rule 402.06, the undersigned attorneys hereby give notice and request permission to withdraw as attorneys of record in the above referenced matter for the reasons stated in the attached Request For Withdrawal, PTO Form SB/83. The undersigned attorneys are associated with Customer No. 23,996.

Copies of the files are being prepared for delivery to the former client, Oscar af Strom.

Although there is a pending Notice to File Missing Parts in this case, there should be at least 30 days between approval of withdrawal and the expiration date of the period which can be obtained by a petition and fee for extension of time under 37 CFR 1.136 (a). The expiration date of the period that can be obtained by a petition and fee for extension of time is November 17, 2004.

The Notice to File Missing Parts dated May 17, 2004 was received in our office on May 19, 2004. A letter was sent to our client on June 3, 2004 notifying it of the July 17, 2004 deadline without extensions for response. This letter also requested approval to proceed with a response to The Notice to File Missing Parts and payment for legal services associated with such response.

This office filed a non-provisional application on behalf of the client on extremely short notice. Our firm was pushed into a rush to file on a non-existent provisional application. Several unbilled hours were spent trying to locate a non-existent provisional file from the estate of the

former, now deceased, patent attorney. Client approved a spec and the new claims, but now says he did not read the claims. Client does not pay his bills on time. Client also demands re-work for free.

Therefore, the undersigned attorneys respectfully request the approval of their Request For Withdrawal attached hereto.

Respectfully submitted,

Date: \_\_\_\_\_



6/15/04

Rick Martin  
Reg. No. 32,267  
Patent Law Offices of Rick Martin, P.C.  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Respectfully submitted,

Date: \_\_\_\_\_

6/15/04



Margaret Polson  
Reg. No. 42,082  
Patent Law Offices of Rick Martin, P.C.  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Date: 6/15/2004

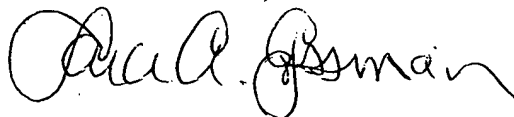
Respectfully submitted,



Aileen Law  
Reg. No. 51,923  
Patent Law Offices of Rick Martin, P.C.  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Date: 6/15/2004

Respectfully submitted,



Sara Gossman  
Reg. No. 52,953  
Patent Law Offices of Rick Martin, P.C.  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

**CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8)**Applicant(s): **Oscar af Strom**

Docket No.

**RM666**

Application No.

**10/783,971**

Filing Date

**02/20/2004**

Examiner

Group Art Unit

**1734**Invention: **Transfer Method for Surface Decoration**

I hereby certify that this Notice and Request of Withdrawal as Attorneys of Record, PTO SB/83 Form and  
(Identify type of correspondence)  
is being facsimile transmitted to the United States Patent and Trademark Office (Fax. No. 703-872-9306)

on June 16, 2004

(Date)

Katharine A. Polson

(Typed or Printed Name of Person Signing Certificate)

Katharine A. Polson

(Signature)

Note: Each paper must have its own certificate of mailing.

**Attachment 9**

**Copies of Invoices, Received From Patent Law Offices of Rick  
Martin PC Together with Copies of Payments Made by the BillPay  
Service of United Nations Federal Credit Union During the Period  
February – June, 2004**

10 Pages



PATENT LAW OFFICES OF RICK MARTIN, PC  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Invoice submitted to:  
Oscar R.F. AF Strom  
Apt. 325 P.O. Box 60326  
Houston TX 60326

February 17, 2004

Invoice #17798

Professional Services

	<u>Hrs/Rate</u>	<u>Amount</u>
2/17/04 Rick Martin: RM666-Draft patent application from notes, <del>draws</del> , calls and computer research		3,800.00
For professional services rendered	0.00	\$3,800.00
2/17/04 Payment from account		(\$2,000.00)
Total payments and adjustments		(\$2,000.00)
Balance due		\$1,800.00

ALL COSTS TO BE PREPAID BY CLIENT. ALL WORK BY RETAINER ONLY.

Previous balance of Client Funds	\$0.00
Payments made from Client Funds	(\$2,000.00)
Payments made into Client Funds	\$2,000.00
New balance of Client Funds	\$0.00

PATENT LAW OFFICES OF RICK MARTIN, PC  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Invoice submitted to:  
Oscar R.F. AF Strom  
Apt. 325 P.O. Box 60326  
Houston TX 60326

March 16, 2004

Invoice #17963

Professional Services

	<u>Hrs/Rate</u>	<u>Amount</u>
3/9/04 Rick Martin: RM666-E-mail reply regarding new composites	0.25 300.00/hr	75.00
For professional services rendered	0.25	\$75.00
Additional Charges :		
2/20/04 Express Mail-RM666		25.00
3/12/04 Copying cost-RM666		9.80
Long distance charges-RM666		11.49
Total costs		\$46.29
Total amount of this bill		\$121.29
Previous balance		\$1,800.00
3/12/04 Payment - thank you. Check No. 9018456861		(\$300.00)
Total payments and adjustments		(\$300.00)

Oscar R.F. AF Strom

Page 2

Amount

Balance due

\$1,621.29

*ALL COSTS TO BE PREPAID BY CLIENT. ALL WORK BY RETAINER ONLY.*

PATENT LAW OFFICES OF RICK MARTIN, PC  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Invoice submitted to:  
Oscar R.F. AF Strom  
Apt. 325 P.O. Box 60326  
Houston TX 60326

April 13, 2004

Invoice #18095

Professional Services

	<u>Hrs/Rate</u>	<u>Amount</u>
3/18/04 Rick Martin: RM666-E-mail reply	0.10 300.00/hr	30.00
3/22/04 Rick Martin: RM666-E-mail reply to patent question	0.10 300.00/hr	30.00
For professional services rendered	0.20	\$60.00
Interest on overdue balance		\$2.48
Total amount of this bill		\$62.48
Previous balance		\$1,621.29
4/13/04 Payment - thank you. Check No. 3766		(\$421.29)
Total payments and adjustments		(\$421.29)
Balance due		<u>\$1,262.48</u>

PATENT LAW OFFICES OF RICK MARTIN, PC  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Invoice submitted to:  
Oscar R.F. AF Strom  
Apt. 325 P.O. Box 60326  
Houston TX 60326

May 11, 2004

Invoice #18232

Professional Services

	<u>Hrs/Rate</u>	<u>Amount</u>
4/28/04 Rick Martin: RM666-Logging and forwarding to client reminder that IDS is due for Transfer Method for Surface....		35.00
For professional services rendered	0.00	\$35.00
Interest on overdue balance		\$1.10
Total amount of this bill		\$36.10
Previous balance		\$1,262.48
5/11/04 Payment - thank you. Check No. 9026887343		(\$362.43)
Total payments and adjustments		(\$362.43)
Balance due		\$936.15

ALL COSTS TO BE PREPAID BY CLIENT. ALL WORK BY RETAINER ONLY.

PATENT LAW OFFICES OF RICK MARTIN, PC  
416 Coffman Street  
Longmont, CO 80501  
(303) 651-2177

Invoice submitted to:  
Oscar R.F. AF Strom  
Apt. 325 P.O. Box 60326  
Houston TX 60326

June 15, 2004

Invoice #18405

Professional Services

	<u>Hrs/Rate</u>	<u>Amount</u>
5/21/04 Rick Martin: RM666-Logging and forwarding to client Filing Receipt for Transfer Method for Surface Decoration		35.00
5/27/04 Rick Martin: RM666-Missing parts review and letter	0.25 300.00/hr	75.00
For professional services rendered	0.25	\$110.00
Interest on overdue balance		\$0.94
Total amount of this bill		\$110.94
Previous balance		\$936.15
6/11/04 Payment - thank you. Check No. 9031216505		(\$336.00)
Total payments and adjustments		(\$336.00)
Balance due		\$711.09

Oscar R.F. AF Strom

Page 2

*ALL COSTS TO BE PREPAID BY CLIENT. ALL WORK BY RETAINER ONLY.*

**View Pending and History Payments**  
02-21-2004 to 03-20-2004

Print Date : 06-20-2004

Process Date	Type	Payee	Account #	Confirm #	Status	Amount
Mar 15, 2004		AMERICAN EXPRES OR AMEX	371572276061008	000094	Payment Sent	4,000.00
Mar 08, 2004		Rick	Office Address	000097	Payment Sent	300.00
Mar 01, 2004		CHASE MANHATTAN CHEM - MA	5211271009036295	000093	Payment Sent	400.00
Feb 27, 2004		California Commerce	4798-1300-0001- 4251	000092	Payment Sent	400.00

<sup>1</sup> - The Estimated Total is the cumulative total of pending payments shown, in chronological order.



**View Pending and History Payments**  
03-21-2004 to 04-20-2004

Print Date : 06-20-2004

Process Date	Type	Payee	Account #	Confirm #	Status	Amount
Apr 14, 2004		AMERICAN EXPRES OR AMEX	371572276061008	000100	Payment Sent	500.00
Apr 01, 2004		Rick	Office Address	000099	Payment Sent	421.29
Apr 01, 2004		CHASE MANHATTAN CHEM - MA	5211271009036295	000096	Payment Sent	400.00
Mar 30, 2004		California Commerce	4798-1300-0001- 4251	000098	Payment Sent	7,819.57

<sup>1</sup> - The Estimated Total is the cumulative total of pending payments shown, in chronological order.

**View Pending and History Payments**  
04-21-2004 to 05-20-2004

Print Date : 06-20-2004

Process Date	Type	Payee	Account #	Confirm #	Status	Amount
May 14, 2004		AMERICAN EXPRES OR AMEX	371572276061008	000105	Payment Sent	400.00
May 13, 2004		Ned	unknown	000106	Payment Sent	314.00
May 05, 2004		Rick	Office Address	000104	Payment Sent	362.43
May 02, 2004		CHASE MANHATTAN CHEM - MA	5211271009036295	000101	Payment Sent	400.00
Apr 30, 2004		California Commerce	4798-1300-0001- 4251	000102	Payment Sent	1,780.79

\* - The Estimated Total is the cumulative total of pending payments shown, in chronological order.

**View Pending and History Payments**  
05-21-2004 to 07-20-2004

Print Date : 06-20-2004

Process Date	Type	Payee	Account #	Confirm #	Status	Amount	Estimated Total <sup>1</sup>
Jul 01, 2004	S	CHASE MANHATTAN CHEM - MA	5211271009036295	000110	Pending	400.00	1,400.00
Jun 30, 2004	S	California Commerce	4798-1300-0001- 4251	000109	Pending	1,000.00	1,000.00
Jun 13, 2004		AMERICAN EXPRES OR AMEX	371572276061008	000108	Payment Sent	1,000.00	
Jun 06, 2004		Rick	Office Address	000111	Payment Sent	336.00	
Jun 01, 2004		CHASE MANHATTAN CHEM - MA	5211271009036295	000103	Payment Sent	400.00	
May 27, 2004		California Commerce	4798-1300-0001- 4251	000107	Payment Sent	4,000.00	

<sup>1</sup> - The Estimated Total is the cumulative total of pending payments shown, in chronological order.

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